The Builder.

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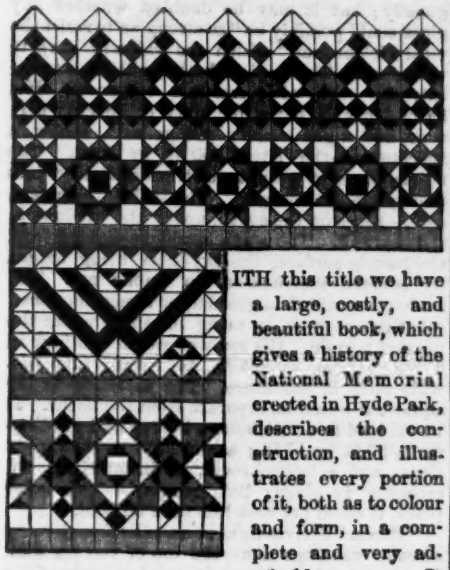
"The National Memorial to his Royal Highness the Prince Consort."*



WITH this title we have a large, costly, and beautiful book, which gives a history of the National Memorial erected in Hyde Park, describes the construction, and illustrates every portion of it, both as to colour and form, in a complete and very admirable manner. It is not too much to say that every Englishman is interested in the circulation of this volume, which will serve to convince all who study it, and who may not be able to visit the monument itself, that the finest modern work of its kind has been produced in this country, and that we have amongst us artists (as well as constructors) of high ability.

It is a distinguishing feature of the book before us that the name of every artist is given in connexion with his work, which should, and we hope will, have the effect of bringing to some of them increased fame and fortune. We would point for example to the remarkable histories written with the chisel on the marble podium, half by Mr. J. Birnie Philip and half by Mr. H. H. Armstead,—the first setting forth the architects and sculptors; the second the painters, poets, and musicians; producing a whole honourable alike to the country and the artists, both as regards conception and execution.

We agree with Mr. Scott that this, taken as a whole, is perhaps one of the most laborious works of sculpture ever undertaken, consisting, as it does, of a continuous range of figure-sculpture of the most elaborate description in the highest alto-relievo of life-size, more than 200 ft. in length, containing about 170 figures, and executed in the hardest marble which could be procured; each figure, not cut, as is usual, out of a detached block, so that every portion can be easily reached, and the waste stone readily struck off, but, on the contrary, hewn out of the solid mass of the monument, just as if the forms were cut out of a solid rock of marble; so that every opening between figures, or between parts of them, became a work of unusual cost and labour. We can bear testimony to the zeal with which both the sculptors, Mr. Armstead and Mr. Philip, persistently carried on their several proportions of the work, though they found a difficulty in respect of the great hardness of the marble, not calculated on when they made their original estimates as to cost. The producers of this successful work deserve some public recognition, and should have it. The name of every figure is appended, and we would note that the lettering should be filled in with some permanent dark material, some of the names being already illegible.

The history of the Memorial will be found scattered through the last dozen volumes of our journal, and we need but slightly refer to it. Mr. Scott, now very properly Sir Gilbert, submitted a precise estimate for the work in April, 1864, and the executive committee accepted in that year the offer of Mr. John Kelk, the terms of which, embodied in an agreement, we print, as honourable to that gentleman:—

"London, April 18th, 1864.

I hereby agree to erect and complete the proposed National Memorial to the late Prince Consort (exclusive of the eight groups of figures and the statue of the Prince), in accordance with the designs and to the satisfaction of George Gilbert Scott, esq., for a sum not exceeding 85,508*l*. At the completion of the work the accounts are to be examined by auditors appointed by her Majesty; and if it should appear that the prime cost of the work to me is less than 85,508*l*., then the sum to be paid to me is to be reduced to the amount of such cost, but in no case is the amount to be paid to me to exceed the sum of 85,508*l*. The committee are to pay for the work as it proceeds, by instalments of 5,000*l*. each, on the certificate of Mr. Scott.

I also agree to bind myself, and in case of my death my representatives, in a bond of 10,000*l*. for the due performance of this agreement. I am also willing that the terms above stated shall, if you think necessary, be embodied in a formal legal document."

Sir Gilbert Scott testifies to the value of the assistance rendered to the work by Mr. Kelk. Honourable mention also is rightly made of Mr. W. Cross, who acted as director of the works for Mr. Kelk.

The last timber of the scaffolding was taken down on the 31st of March, 1871.

When this was done, the iron tie-rods between each arch became visible, and an impression prevailed that these rods had only just been introduced as a precaution against thrust.* They had, however, been fixed in 1866, whilst the arches were being turned, and it was thought to be more satisfactory to allow them to remain for a time after the centreing had been removed, in case any tendency to subsidence or thrust might appear, though from the peculiar arrangement by which the spire is carried, such a contingency was not considered to be at all probable. Each of these rods consisted of two pieces of iron joined together in the centre by a large screw-nut; they were tested from time to time, but no tension was ever observed. They appeared to be affected only by change in the atmospheric temperature. After remaining in position for nearly five years, they were removed in April, 1871.

The central portion of the monument is based upon a mass of concrete, 60 ft. square and 17 ft. in thickness; indeed, in some parts it is of much greater thickness, owing to the inequalities in the solidity of the ground. Upon this are laid two continuous courses of thick stone landings, bedded in Portland cement, and on this platform is erected the superstructure of massive brickwork, upon which the monument is based. The substructure which supports the steps and landings surrounding the monument, though planned simply with a view to their practical uses, form a curiously intricate and picturesque series of catacombs, which may be entered by a trap-door provided beneath the surrounding platform.

The materials of which these steps are formed is mainly the grey granite from Castlewellan, in the county of Down, the same granite being used for the large pedestals at the angles of the steps; a portion, however, of the steps came from Dalbeattie quarries, in the county of Kirkcudbright.

Owing to the slope of the ground towards the south, an additional range of steps was required on that side leading down to the drive in front. These steps,—no less than 200 ft. in length,—are of the granite from Penryn, in Cornwall, while the blocks which terminate them are of the same granite capped with the pink granite from the Isle of Mull. The landings of the steps are paved with stone of varied colours, consisting of the white mountain limestone of Hopton Wood, in Derbyshire; the red magnesian sandstone from Mansfield, in Nottinghamshire; and the dark slate stone from Charnwood Forest, in Leicestershire.

The granite up to the levels as yet alluded to is unpolished, but wrought by the axe with extreme delicacy and precision. Above this level, however, all the granite which is exposed to view is finely polished, and has been studiously selected in point of colour and texture, with a view to the harmony of its artistic effect.

The podium, or stylobate, which forms the base of the great canopy, and to the carving on which we have already alluded, is of two kinds of granite, and of marble. Its base-moulds, 3 ft. in height, are of a single course of the richest red granite from the Ross of Mull, and the cornice, 2 ft. in height, is of a lighter-coloured variety from the same locality; both wrought and polished with the greatest care and precision. The intermediate portion, which is of marble, and is occupied entirely by sculpture, is 6¼ ft in height in a single course.

The construction of the four main clusters of shafts which carry the canopy was of course all-important. These do not trust alone for their bond of union to the metallic band which binds each cluster. Each of the four greater shafts (which are about 2 ft. in diameter) is attached by a dovetailed groove to the central core, and the groove is run in solidly with Portland cement. Besides this, there is another very important method of attachment; for, while the shafts are jointed behind the metal band at about one-third of their height from the base, the core is jointed at about the same distance from the capital, thus, as the workmen say, "*breaking joint*;" the longer length of one crossing and strengthening the joint of the other, while the joint in each is attached to the side of the other by strong copper cramps, and each block is also plugged with four copper dowels to that below and above it; so that the entire group is, as it were, in one piece.*

The spire, which surmounts the stonework, is wholly of metal, and is supported by two enormous "box" girders of wrought-iron. Each girder lies diagonally from corner to corner of the structure. They may, perhaps, be more truly described as *one* girder in the form of a cross, for at their point of intersection they are so united by the interlacing of their component parts as to become in reality a single girder. The girders are in section, 3 ft. 4½ in. in depth, by 3 ft. 6 in. in width; their length each way is 31 ft. 6 in., and their clear bearing 23 ft. 6 in. Their weight is 23 tons, and it is calculated that they are capable of sustaining a load equal to 360 tons. The ends of the girders rest upon vast blocks of granite, which being laid across the angles of the structure, tend to bind its walls together, and to carry down its weight directly and vertically upon the columns. How the amount of iron used in the construction may behave in the course of time is a problem not yet to be solved.

The architectural carving was carried out by Mr. Brindley. Sir Gilbert says,—"The capitals of the great piers [of which we are enabled to reproduce the illustration given†] are, as I think, very effective work. They are founded on such as we find in ancient buildings in France and Germany, and such as we see in this country, in the eastern parts of Canterbury Cathedral,—a form of capital originating in the Corinthian, but entirely rethought out by the great Mediæval artists. The arches are, in some of their divisions or orders, beautifully carved with pierced

* London: John Murray, Albemarle-street. 1873.

* This idea was very prevalent at the time; allusion was frequently made to it in different newspapers, and a question referring to it, was even asked in the House of Commons. The reply of the Chief Commissioner of Works at once disposed of the notion.

* The weight borne by each group of columns is 21 tons per foot super.

† See p. 926.

foliage in high relief, thus obtaining effect by contrast."

The architect was personally represented on the works by his assistant and former pupil, Mr. Coad, who had been engaged in the preparation of the working drawings in conjunction with the architect's second son, Mr. J. O. Scott; the drawings which were submitted in the first instance to the committee having been made under the architect's own inspection by his eldest son, Mr. G. G. Scott, who devoted to them much laborious attention.

A very important part of the monument is the artistic metal-work, the whole of which was carried out by Mr. Skidmore. "It is here [says the architect] that my thought of realising on a large scale the ideal of the old shrines comes literally into practical operation; for here the classes of art and ornamentation displayed in those exquisite works on a minute scale, suggesting only the models of some large structure, are directly reproduced in cognate materials, and to a scale of reality instead of mere miniature models. The materials in which the works of the Mediæval gold and silver smiths are thus translated, as it were, into life-size, are copper and lead, and in these humbler metals are reproduced in noble workmanship, and to a noble scale, the *repoussé* work, the chased and beaten foliage, the filagree, the gem-settings, and the matrices for enamels, such as are found in the shrines of the Three Kings, or of St. Elizabeth. No nobler work in metal for architectural purposes has, so far as I know, been produced in our own, or, probably—considering its scale and extent—in any other age." And the architect then pays a high compliment to Mr. Skidmore. We have only to add in this direction that the mosaics in the tympana and spandrels, also the vault of the canopy, were executed by Signor Salviati, after cartoons by Messrs. Clayton & Bell.

Now, as to the sculptural works not already alluded to, the general scheme may be thus stated:—The great statue of the Prince Consort himself, by Mr. J. H. Foley, forming the central feature, round which all other works of art group themselves, we have at the angles four ranges, each containing four illustrations of subjects to which the Prince had devoted his study and patronage.

1st. On the pedestals at the outer angles of the steps we have groups of figures in marble, representing allegorically the quarters of the globe, with reference to the Great International Exhibitions which have done so much for practical art and manufactures and the productions of varied industry, and which claim the Prince Consort as their originator. These were executed by Mr. J. H. Foley, Mr. Macdowell, Mr. W. Theed, and Mr. John Bell; and are noble works.

2nd. We have on the upper pedestals, which form the angles of the podium, groups, also in marble, illustrating Commerce, Agriculture, Manufactures, and Engineering, all furthered and promoted by International Exhibitions: these are by Mr. Thornycroft, Mr. Calder Marshall, Mr. Henry Weekes, and Mr. John Lawlor.

3rd. The great pillars of the Memorial bear on their outer faces—on pedestals of polished granite and bronze—statues in bronze, representing Astronomy, Geology, Chemistry, and Geometry; while

4th. On the niches immediately over the capitals of these pillars is a second range of bronze statues, representing Rhetoric, Philosophy, Medicine, and Physiology. The whole of these were executed by Mr. J. B. Philip and Mr. Armstead.

These groups and statues, which occupy the four *angles* at successive heights, thus illustrate the whole range of science, and of practical art and industry.

Some of the bronze gilt statues in the spire, designed by Mr. James Redfern, are very beautiful.

We are glad to find that Mr. Murray has supplied an omission in his first published smaller account of the Memorial by printing the names of the Mansion House Committee, by whom important work was done.* It was the privilege of the conductor of this journal to co-operate with some half-dozen other gentlemen deputed to act for the general committee (as it also had been his privilege in raising the Memorial of the Great Exhibition of 1851, at South Kensington), so that we speak from personal knowledge when we record the zeal and loyalty with which the original committee long and sedulously worked.

The Memorial bears the following dedicatory inscription, executed in mosaic work, and which may fitly end our notice. It runs round the structure, and is so divided that each side shows a complete sentiment:—

QUEEN VICTORIA AND HER PEOPLE
TO THE MEMORY OF ALBERT PRINCE CONSORT
AS A TRIBUTE OF THEIR GRATITUDE
FOR A LIFE DEVOTED TO THE PUBLIC GOOD.

* The closing report of this committee, forwarded to her Majesty in October, 1872, will be found in our volume for that year (XXX., p. 909): it is signed,—"George Godwin, chairman; Charles Hill and P. Le Neve Foster, members of the executive committee; Michael Gibbs and S. E. Goodman, honorary secretaries."

THE HASTINGS AQUARIUM AND BATHS COMPETITION.

During the past few days there have been on view in the Market-hall, Hastings, sixteen sets of designs, sent in competition for a premium of 100 guineas, for the best scheme to enable the town council to inclose a recessed portion of the shore so as to widen the parade and roadway, and to apply the under space to the purposes of aquarium, baths, or "such other purpose as may suggest itself to the designer." The spot in question is at White Rock, about 150 yards east of the new pier, where the Eversfield Parade terminates in a bastion, 40 ft. farther seaward than the beach to be inclosed. In reality, taking a base line from the pier to the Queen's Hotel, the shore nearly forms a triangle, 1,300 ft. long, and 120 ft. from base to apex. The portion to be dealt with is the western half of the triangle, into which the sea sweeps in rough weather with terrible force. The eastern part, forming Carlisle-parade, belongs to the Crown. A prime condition of any plan adopted must be that it does not throw the sea into the adjoining shore, so as to cause damage to the Crown estate. Originally the council contemplated the erection of a sea-wall only. The estimate for the work, prepared by Mr. Andrews, borough surveyor, showed the cost to be 4,000*l*. A delay having arisen, Mr. Alderman Howell, one of the principal builders, suggested the utilisation of the site by forming an aquarium, baths, &c., within the wall. Hence the resolve to offer the premium. No conditions were laid down, each competitor being left to inclose what space he would, and deal with it how he would. Probably this was a mistake. It was understood in the council that a company was to be formed to carry out the work, with the probable effect of releasing the town from the cost of the wall. In that case, local experience has shown that 40,000*l*. would be the utmost amount of capital which could be raised; consequently no more expensive scheme has the slightest chance of being adopted.

No doubt, the best plan would be to enclose the whole triangular area. This would offer several advantages, but would also involve the purchase of private rights, and bargaining with the Commissioners of Woods and Forests.

In sketching the features of each set of plans, we mainly confine ourselves to name the specialty of the design in each case. Three or four sets are evidently the work of tyros, or of those conceited persons who think no training necessary in order to produce an architectural design. On the other hand, there is shown, in several instances, more than ordinary ability in planning and arranging the space at disposal. As a rule, the competitors go seaward, fully to, or beyond, the line of Eversfield Parade; and they end with more projection at the east end than exists at the present bastion; an objectionable feature, as the probable result would be injurious to Carlisle Parade. A shaft would have to be provided, for the steam-engine and boilers; and all the designers propose a tunnel under the roadway and houses, to the cliff in the rear, after the plan adopted at Brighton. Three of the competitors propose to enclose the whole triangular space; and the most elaborate and most expensive design of all is arranged in that view. The others only suggest the advisability of doing so. The majority have selected the east end as the better place for the baths, and have placed entrances in the centre of the parade. This seems to be the better plan, as there would be less diversion of the line of traffic than there would be by any other arrangement. There is reason to believe that nearly half the plans sent in are from local men. Indeed, the names of authors in two instances are so well known, that an impartial judgment can hardly be pronounced. As matters stood, the award of the premium rests with the council, amongst whom are two of the principal resident building contractors, an architect and surveyor connected with an important estate, and others experienced in building matters.

The various plans are now presented in a classified form. Amongst the schemes which adopt openings for light in the sea-wall, "Alpha" goes to the farthest extent. In the face of a granite wall, reminding one of the Thames Embankment, he has upwards of a dozen windows. These are to be glazed hexagonally; but it may be doubted whether any glass could possibly be "so strong as to resist the most violent seas" which the wall will have to withstand. The ladies' baths will be at the extreme east, with separate entrance. Hot baths, Turkish baths for sixty or seventy persons, and a gentlemen's plunge-bath, follow in succession,—the latter 100 ft. by 35 ft. The aquarium is in a crypt, 40 ft. wide, divided into two by granite columns. The tanks are on each side,—those on the south, under the windows in the sea-wall. The north would be lighted from the parade-surface, the skylights being hidden by covered seat-houses, for public use. The author is enabled to give larger dimensions than other competitors, by using the space under the present parade. His sea-wall would continue in a straight line for 850 ft., and would take in a wide strip of the shore. The entrance to the aquarium would be separate from the baths. It would lead to a vestibule, a library and reading-room, 96 ft. by 17 ft.; a museum, same dimensions; and a lectnre-room, 40 ft. by 27 ft. No estimate is given; but, compared with other plans, it could not cost less than 50,000*l*.

"Persia" derives light principally from twenty circular openings near the top of the sea wall. He proposes to inclose only a narrow strip of the shore; but by going 200 ft. farther westward than either of the other plans he gets 825 ft. total length by a width of 40 ft., ample space for aquarium at the west end, 320 ft. by 30 ft., with tanks on the north side only. Between each window opening in the sea wall is a massive buttress. The recess is filled with ferns, &c. The hall is sub-divided into a series of courts. The roofs to form promenade will be of iron plates, supported by cross girders, and covered with concrete and asphalte. There is but one entrance, in the centre, with toll-houses on the landing of a double flight of stairs. A hall, 30 ft. square, leads to the aquarium on one side and baths on the other. The author indulges largely in fanciful arrangements of rock-work, ferneries, and caverns, with out-look to the sea, through the windows. His interior decorations are as gorgeous as "a style combining the brilliant jewel-colouring of India with massive Babylonian solidity" can make them. In the baths "Persia" introduces a feature in which he stands alone. Two baths, 20 ft. wide, and each 50 ft. long, are separated by folding doors. A gallery is fitted over the bath-rooms, and thus, on gala occasions, swimming matches, &c., a large number of persons could be accommodated as spectators. In two other details, the author of the Persian plan is original: he takes his starting-point for the sea-wall farther west, and keeps inside the present wall at the corner, and he provides chambers 90 ft. long, at either end, which he would let out as vaults, but which could be used for an extension of the aquarium and baths when required. Estimated cost of building, 17,500*l*.; and 3,965*l*. additional for engine, furniture, &c.

"*Au bon Droit*" produces a "cheap" plan, though not altogether defective. He puts the baths at the west end, and shows one spacious entrance for the whole. The stairs lead to an open court, with arched corridor. The refreshment-room and reading-hall are at the east side of the corridor. There are twenty-eight tanks in the aquarium, which is lighted both from openings in the sea-wall, and from flush lights in the parade. A marine pond with rock fernery is placed at the end of the structure. The baths are lighted by windows on the parade. The larger plunge-bath, 107 ft. by 45 ft., is for gentlemen; and the second-class bath, "to be used occasionally by ladies," is 77 ft. by 45 ft. The hot baths are well arranged. A Byzantine style of architecture is adopted. Like "Persia," the author prefers to narrow the eastern end, so that it does not project far beyond the present wall. He is more in favour of baths than an aquarium as one of the needs of Hastings. His estimate "that 10,000*l*. would suffice to build the place," makes it the cheapest scheme in the room.

"*Nunc aut Nunquam*" illustrates his plan by the best drawings in the hall; and (though locally unknown, apparently belonging to London), has evoked favourable professional opinion locally. Both exteriorily and internally he produces good effects. A Classic style is adopted. Seven turret-like projections in the sea-wall break the monotony, and afford room for seats. The wall would be of concrete, faced with granite. The projection into the sea, at the east end, would be very great—110 ft. This would help to carry a future extension on to the Queen's Hotel, in a direct line. It is the only plan which discards stairs, and uses a sloped way for entrance. The author says he proposes to make the building cellular in construction as far as may be. The roof would be for the most part vaulted, the brickwork built upon walls and girders. Light "is introduced in a way to make the corridors cheerful and agreeable." The aquarium is at the west end, baths at the east. A large entrance-hall divides the two portions. The aquarium is in two corridors, with intervening conservatory, 58 ft. by 52 ft., to serve for concerts. There are eight tanks (some very large), in the east corridor, and fourteen tanks in west corridor. The author has availed himself of the advice and experience of the naturalist and the engineers of the Crystal Palace Aquarium. He strives for a good effect by placing all the principal apartments in one direct axial line, and in discarding any impediment to a clear view from end to end. The estimate is 50,000*l.* to 60,000*l.*

Nearly the most ambitious design of the whole is marked "*Utile Dulci.*" This plan must be distinguished from a second author of the same name, by its proposed dome and spire. Its features are novel, though there is a question as to its practicability, both as to cost and danger from the extent of projection seaward. Besides carrying his sea-wall considerably beyond the line of the pier entrance, three bastions are shown with still greater projections. These are protected by a lower parade, which would form a private promenade. The force of the sea at the east end is proposed to be modified by adopting a double curve. The sea-wall would be 10 ft. thick, formed of concrete, faced with stone. "*Utile Dulci*" thinks a paving below high-tide level would be opposed to a resistless force of water from below. To obtain sufficient height, he would raise the parade surface by a gradual slope towards the entrance,—in the centre,—as much as 4 ft. to 6 ft., and thus secure 18 ft. height above the highest spring tide. This plan shows the aquarium at the east end. The buildings connected with it are in the Early Pointed style. The entrance-hall and reading-room, 70 ft. by 60 ft., gives access to the refreshment-room, 40 ft. by 35 ft.; the curator's room, &c. There are forty-seven tanks, some very large, arranged at the sides of corridors, 200 ft. long, intersected by an open room. Beyond the corridors is the circular concert-room, over which the dome and spire are raised. Cloisters around the room are used to form the floor of a gallery, which is to be reached by winding stairs in a grotto on the south. A winter garden is also planned. The corridors of the baths are roofed with a barrel vault. There are shown 25 hot baths; swimming-baths, 60 ft. by 25 ft., and 70 ft. by 50 ft., with semicircular head, for gentlemen. The ladies' baths are approached by a different passage to those of the gentlemen, from an entrance-hall, 42 ft. by 35 ft. Besides a swimming-bath, 48 ft. by 30 ft., there are 18 hot-baths and Turkish baths. No reservoirs are provided, on the ground that they would be an unnecessary expense. The space inside the bastions is used as part of the design. The ladies' bath, and some other portions, would be lighted by patent prismatic pavement lights; the remainder by skylights. The objectionable features are too numerous to give this design the premium. Estimate, 87,000*l.*

"Neptune" produces the most costly design of all. Even though it should be thought the best, the estimate would prevent any attempt to carry it out. The plan shows the baths on the forbidden ground, within the eastern part of the triangle. The author can consequently afford more convenience than those who take up less land; and his arrangements would be likely to give general satisfaction. The ladies' baths show a plunge-bath, 68 ft. by 50 ft.; and the gentlemen's ditto is 104 ft. by 75 ft. There are sixteen private baths, and a Turkish bath of large size. The ladies have a separate entrance, but the gentlemen find admission at the entrance-hall, 92 ft. by 66 ft. The aquarium is divided by a large central hall, 66 ft. by 46 ft., containing two very large tanks. Altogether there are three corridors,—one 200 ft. long,—with tanks; also a concert-room, and tanks for seals and reptiles. There can be no doubt that Brighton has provided a model in this instance. An alternative plan, confined to the smaller space, gives the same arrangement of baths, &c., except that the Turkish bath is rejected. The larger plan would cost 150,000*l.*; the other, 90,000*l.*

"*Murus Maritimus.*" The design under this name, illustrated by eight or nine plans and drawings, has, from local causes, with another set adjacent, shared the bulk of popular favour. Unnecessary ornamentation is avoided; but a good scheme has been arranged. The drawings show a lighter kind of structure than the others, in consequence of the free use of iron girders and lofty ceilings. The principal tank-room has a large central passage, and two aisles close to the tanks—an arrangement which would be useful whenever a large number was present. The two entrances and three sets of skylights are placed in the centre of the parade, the latter being hidden by the backs of public seats built around the openings. A good space for promenade is left on either side. The entrance to the aquarium at the west is through an open courtyard. Besides the large room for tanks, already mentioned, there is an octagon room and two corridors for small tanks, which are placed on the sides of a room for a museum of considerable dimensions. From the eastern entrance, which also serves as an exit from the aquarium, males and females have separate corridors to the baths. The boiler and engine-room are under the stairs. The ladies' plunge-bath is 56 ft. by 21 ft., and the men's, 100 ft. by 40 ft. The authors of the design explain that they have arranged the sea-wall (of concrete) in such a manner that it may stand alone, and that they have kept in view the possibility of any change which might take place in the opinion of visitors to require other attractions. The plan shows a projection beyond the line of the existing wider parade; and the propriety of inclosing all the triangular area, is warmly advocated. Estimated cost, 32,000*l.*

"Cancer" is also favourable to a straight line of protection, from the pier to the Queen's Hotel, and he carries his sea-wall out to enclose a depth of 120 ft. at the east end. He omits baths, in order to have a large aquarium. Between the two rows of skylights which light the tanks he proposes a terrace, 5 ft. high and 30 ft. wide. The lanthorn of an octagonal pavilion, at the east end, is made less objectionable by surrounding it with covered seats; and some other useful arrangement is contemplated in connexion with the raised entrance at the west end. An Italian style of architecture is adopted in the open courtyard, with fountain in the centre, and arcade around. The tanks,—altogether, twenty-four large and sixteen small,—are well arranged: many of them are recessed, so that a crowd of persons could watch the fishes without the pressure of a moving crowd, on holiday occasions. The author farther provides a submarine gallery, with tank, 68 ft. by 28 ft.; a room for large tanks, cutting off the continuation of the corridors; a court, 54 ft. square, with pond for diving-bell; a *restaurant*, &c. A subway under the aquarium, to be used as a reservoir, would fill at sea-level. The cost is put at 24,000*l.*

"Victor" may be coupled with "Cancer" in designing an aquarium only. His sea-wall would inclose about 70 ft. width of beach, except at the east end, where a semicircular bastion would project an additional 10 ft., the purpose being to make an incline for Bath-chairs. The entrance would be at the east end, with a court-yard, entrance-corridor, and entrance-hall and reading-room, 62 ft. by 53 ft. A large refreshment-room and a dining-room are shown near the steps. The tanks are placed down the centre of the corridor, which is broken by a vestibule 50 ft. by 39 ft. Beyond is the grand corridor, 170 ft. by 31 ft. 6 in., with large tanks at each side. At the end is the conservatory, or concert-hall, to seat 1,000 persons, 82 ft. 6 in. by 62 ft., with fernery, waterfall, and ponds beyond. The boiler, &c., is at the extreme west; whilst the offices are at the entrance end. A kitchen would be formed over the dining-room. The material would be largely brickwork, stone, and terra cotta. The author avoids all signs of building out promenade space. He places the toll-houses on a landing, 9 ft. below the surface; and proposes to get light from numerous glazed iron frames, fixed, as an ordinary vault grating would be, in the surface of the parade. Ventilation and fresh air are obtained by means of openings near the top of the sea-wall, and in the courtyard. The estimate is 40,000*l.* to 50,000*l.*; but "Victor" says "the question of cost is most elastic."

"Stability" is the design which competes with "M. M." in local favour. Besides plans and fair perspective views, a large model makes clear the intentions of the designers as to the exterior. This plan would occupy a considerable portion of the promenade space for lights, &c. The entrance-stairs are put close to the roadway, so that persons could alight from carriages at the door. In the underground arrangement one is struck with the number of circular and oval-shaped divisions introduced. From the eastern entrance-hall access is gained to the aquarium corridors, in connexion with which are a seal-pond, caverns, and rockeries. The men's bath is oval in shape. The Turkish bath and the private baths are satisfactorily placed. Three tower-like projections from the surface of the wall, whilst they add considerably to the interior space, are likely to offer a great obstacle to the heavy waves in a storm. The estimated cost is 30,000*l.*

"*Utile Dulci*" (No. 2) is, on the whole, entitled to praise. He follows the majority in putting the aquarium at the west end; but his covered-portico entrances, with waiting-rooms, offices, &c., above the parade, will be an objection to the design. He also curtails the promenade-space too much, by surrounding "the remaining portion of the building site" with an ornamental balustrade, within which is a terrace-walk, from the waiting-rooms. At the baths-entrance, the ways to the ladies' and gentlemen's departments are separated, on the landing. Each department has a hot as well as a cold sea-water bath, rooms for eight bathers, and ten private rooms for either hot or cold baths. The engine and boiler are put between the two sets of baths. The staircase to the aquarium is only 10 ft. wide, which is not sufficiently ample. The aquarium (having thirty-two tanks of uniform width) is 160 ft. long, 26 ft. wide, and 13 ft. 6 in. in average height. Light is admitted through the arched ceiling through circular openings. A saloon, 50 ft. square, is at the west end. The sea-wall is shown strongly arched at the back, to resist pressure from the waves. Ferns are shown in the recesses. The sea-wall, of brick, is to be faced with glazed bricks "for the better exclusion of damp." Cost, 40,000*l.*, supposing ballast and sand for concrete are to be had on the spot, and that no extraordinary difficulties would arise in carrying out the work.

"Aquarius" offers another "cheap" plan (18,111*l.*), though he starts 20 ft. outside of the line of Eversfield Parade, and finishes 80 ft. from the existing sea-wall, at the east end. He plans two buildings above the parade-surface,—one for the *restaurant*, the other as a reading-room, with residence for the person having charge of the building. This author stands alone in placing the aquarium in the centre, and assigning the extreme ends for the baths. By putting a platform over the courts of the baths, he would form corridors 20 ft. wide. One of these would be part of the entrance; the other would give space for a museum, fine-art gallery, aviary, &c. The tanks are on either side. A large hall is provided across the centre of the corridor. Baths are shown of large size, and private baths around them. The hydraulic arrangements are made so as to avoid the expense of pumping. A considerable portion of the centre of the parade is taken up by the buildings and skylights; but a broad space is allowed on either side, connected by cross-passages. The sea-wall (concrete) is put at 3,950*l.*; central hall and aquarium, 4,675*l.*; baths, 7,486*l.*; surface buildings, 2,000*l.*

The conception of "*Finis coronat Opus*" is commonplace. By going back farther westward, and using a part of the present broad parade, he gets a length of 698 ft. A circular staircase, on the east, divides the ladies' and gentlemen's baths. These are plunge only,—the larger, 80 ft. by 40 ft.; the smaller, 50 ft. by 40 ft. Next to the ladies' bath is the engine-room, which separates the east portion from the aquarium. The stairs to aquarium are close to an oval central wall, 68 ft. by 52 ft., opening from which are two corridors, 130 ft. long, with eight tanks to hold 17,000 gallons each, and thirty-one to contain 9,000 gallons each. A semi-circular seal-pond is also arranged for. Close by is an exit. Estimated cost, 46,000*l.*

Designs are also sent in by "C. E.," 44,752*l.*;

"Dreadnought," 32,000*l.*; "Student," 25,000*l.*; and "*Non quo, sed quomodo*" (no estimate). These are so indifferent in design or execution, or so meagre in particulars, that they need occupy no space here.

A large number of townspeople have looked at the designs, as displayed in the Market Hall; and considerable commendation has been bestowed upon the authors of those best coloured and most ably drawn.

It is to be hoped that the Council will call in the aid of some disinterested professional adviser.

THE FIREPLACE, ARCHITECTURALLY CONSIDERED.

From the "noble savage" cowering over a heap of burning sticks or dried leaves, to the owner of a modern mansion sitting before the sculptured or tile-bedecked erection which forms the setting to his patent grate, is perhaps a transition as strongly marked as any which can be shown, from the conditions of barbarism to those of civilisation. That which in the former case is the mere means of obtaining the warmth necessary for life and for the preparation of food, in the latter case has become the central point of the decorative treatment of the chamber, the gathering-place of family and friends; and the very word "fireside" has become in northern countries, suggestive of, almost synonymous with, the most heartfelt associations of domestic happiness and regard. It is no wonder, then, if, as soon as domestic architecture became developed in countries where climate necessitated frequent fires, the fireplace should have received special attention not only in regard to its utilitarian purposes and adaptation, but as an opportunity for combining comfort or luxury with architectural, or at least ornamental, effect.

Viewed in this light, the fireplace may be regarded as an emanation of Mediæval life especially; the centre of its domestic life, as the fountain is the centre of home life of classicalism. It had its rise, and came into form, at the commencement of the great period of Mediæval architecture; and its earlier specimens are impressed with that massiveness and largeness of treatment, and that rough, but on the whole strictly logical, relation of form and treatment to practical utility which characterises nearly everything belonging to that great age of artistic construction. It must be observed, however, that in these earlier specimens of the fireplace the *architectural* idea is completely in the ascendant. Of the three objects of decorative treatment in the modern fireplace,—the mantel or surrounding masonry, the hearth, and the grate itself,—the first only could be said to occupy the attention of the Mediæval workman, and that in a way which differs most essentially from the treatment of the modern "chimney-piece;" for while the latter is in most cases a separate erection capable of being purveyed for in a showroom and fixed up after the house is finished, the Mediæval fireplace, according to the stern and uncompromising architectural spirit of its constructors, is an integral part of the edifice, built up and bonded with the other masonry, and forming an opportunity for the display of ingenious masonic construction and architectural character and dignity of expression. The hearth in these old examples was not, so far as decoration is concerned; the grate, where existing at all, was a plain receptacle of iron bars, innocent of the glitter of polished steel; but on the other hand, the chimney, now a disguised necessity, so far as the interior of an apartment is concerned, was boldly shown, the lower part often corbelled out far from the wall, and showing like a vast tunnel opening upward from the room. The absence in the first instance of a grate to hold and concentrate the fire, was probably the original cause for bringing out the chimney in these large proportions; for the erratic smoke from a fire of wood loosely piled on a hearth could only be fully caught and collected by such ample provision. M. Viollet-le-Duc, who gives in his "*Dictionnaire*," illustrations of some fine examples of these older fireplaces (under the head of "*Cheminée*"), observes that,—

"*Le cheminée primitive se compose d'une niche prise aux dépens de l'épaisseur du mur, arrêtée de chaque côté par deux pieds-droits, et surmontée d'un manteau et d'une hotte, sous laquelle s'engouffre la fumée. Les plus anciennes cheminées sont souvent tracées sur plan circulaire, le foyer formant un segment de cercle et le manteau l'autre segment.*"

This plan of the fireplace, with the circle thus worked into the back of the fireplace proper, and carried out as a convex semicircle in the projection of the chimney, is highly characteristic, in its unity and simplicity, of the spirit of Early Gothic architecture, or perhaps we may rather say, of the spirit of true architectural design everywhere. In these old fireplaces, however, the chimney-shaft, or tunnel, as it may rather be called, formed a portentous erection to see cutting up one side of your apartment, and breaking the ceiling line so awkwardly, as it frequently did, at the top; and it could only be in days when luxury and finish in the furnishing of apartments were unknown that such a huge excrescence could be tolerated. Its deliberate imitation in some modern Gothic mansions or "castles" is scarcely to be justified, now that we have every means for manipulating the fire so as to get it in a small compass, and place it where it will most readily be drawn up the chimney without building out the latter to catch the smoke. What about the draught of these old smoke-tunnels, though? We do not remember whether there is any old monastic or baronial chronicle which would give information on this head; any chapter *de chimnibus smokentibus*, which would record how far our ancestors suffered from down-draughts, before "tall boys," and "cowls," and all the other contrivances which make our street-roofs hideous, were thought of.

But, however the mind of the architect may approve, in the abstract, of such a purely architectural treatment of the chimney as the Mediæval examples show, this treatment, in its integrity, is scarcely to be rendered suitable to a modern habitation. In the transition period between the old and the modern fireplace, when the bulky smoke-tunnel had been found inconvenient, and probably draughty, but before the taste for largeness and depth in fireplaces was extinguished, the compromise was effected by having a great fireplace opening, with a deep recess, at the back of which was the actual grate and fireplace, opening into a chimney of convenient and practically effective size. Thus the dignity of the fireplace was preserved, in regard to the size of the opening, and the sides of the recess formed places for a fireside seat. The modern system has gone further, and reduced the fireplace, even in the highest class of residences, to a mere hole-in-the-wall affair, and effect and richness are sought for in applied decoration and accessories. But, even granting the good taste of all the applied decoration, it may be questioned whether we should not do better to follow the older plans somewhat more than we do, or at least to apply them in a modified manner. We cannot in these days carry the actual masonry of our house into the drawing-room fireplace. Modern manners and tastes will not admit of this; but we may, in arranging and designing fireplaces on any large scale, endeavour to connect and bond the work of the chimneypiece design, be it marble, or Caen stone, or whatever else, into the mural construction, so far as to make it a permanent portion of the architecture, and not a mere applied "fixture"; and we may design it in reference to the room and to its immediate adjuncts, which is not very often done. The value of the large recess for the fireplace depends a good deal on what is wanted from the fire, and whether the main part of the room is otherwise warmed or not. There can be no doubt that the aspect of the large recess is far the best and most dignified, and that there is a comfortable and home-like appearance in the "ingle-nook," with its seats, which no other arrangement gives to the same extent; but it is equally certain that a fireplace so placed does not avail much to warm the centre and further corners of the main apartment; and the only way to satisfy both demands would be to have the fire for effect, and hot air or water circulation for actual heating. The fireside recess, however, is an idea which is recommending itself to some architects and their clients at present, and has been exhibited in recent designs of this kind, some happily combining the old "homely" look (in the best sense of the word) with modern good taste and refinement in style of decoration, some showing the mere naked reproduction of Mediæval bareness and clumsy proportion, without Mediæval picturesqueness.

In regard to the modern chimneypiece, in its ordinary forms, we must confess here, indeed, to finding a sad downfall from the older style of fireplace design. There is something in the usual style of slab chimneypiece, in "bardiglo" or "black and gold," which is indescribably offensive and flimsy in manner and effect. The whole thing is such a mere piece of veneer, planted out to look solid; the thin slab at the top is so mean a termination, without weight or massiveness, that the article appears to be specially calculated to repel and annoy all our architectural susceptibilities. Of the current forms of design, if it can be called so, for these things, and the kind of look that they have all in a row, in their repetitions of nothingness, in the dealer's show-room, we are not worthy to speak adequately. Only, it seems very absurd, seeing what the fireplace is, and that it is the place to which every one naturally turns in a sitting-room, and opposite to which the master or mistress of the house naturally sits to read or to rest, that it should be so almost universal, in the average type of "well-to-do" dwellings, to take for this part of the furnishing of the room some hackneyed dealer's model, instead of having the thing done according to some definite motive, and in harmony with the owner's taste. If we must have marble, and cannot afford it in solid blocks, it is much better to use it as a single broad band or architrave round the opening, which may be treated with inlaid panels, and to avoid altogether the pretence of pilaster and architrave which forms the usual receipt. In regard to the usual termination to the chimneypiece, the shelf, this is objectionable only because it is usually so badly treated: it is too thin, and it is constantly fixed so as to appear, and to be in reality, very insecure. The shelf should be much thicker than it is usually made, and moulded on the edge, and should always be supported either by large and ample brackets, giving an obvious support, or by shafts rising from the base of the design; a feature which might be much oftener used than it is, and would afford scope for considerable novelty in design, especially in the combination of the shaft and bracket. Where economy is an object, and some comparatively inexpensive stone is used for the chimneypiece, turned slate shafts may be used with very good effect, and at very little expense. The tendency among those who profess to have specially architectural tastes at present is to ignore altogether the mantelshelf, and to finish the chimneypiece by a raking set-off dying into the wall-surface. But the shelf, if properly designed and constructed, is really a suitable and well-placed feature, for the position is a very good one for arranging small ornamental objects, of artistic interest, where they can be well seen and contribute to the general appearance of the room; and if it is replied that the set-off is the architecturally correct treatment, representing externally the "gathering in" of the flue, it may be found that it is quite possible to combine both, and to bracket out the shelf from the face of the set-off. But the absence of the shelf will be generally felt to be a loss, except among those who go merely by fashion.

Where either economy or taste is against large and massive architectural erections as chimney-pieces, the employment of oak or other hard wood would often be much more suitable than marble. The panel treatment, which is suitable in flat designs of this kind, is the natural treatment of wood, while it is not really suitable to marble; and wood used in flat slabs can be fixed and tenoned in a more permanent way than is possible with the marble veneers which form so many of our chimneypiece designs, and which are constantly getting loose, and showing gaping joints. Inlay of darker woods would be most suitable as ornament in such a case; or even silhouette designs in a dark tint, where inlay is too expensive. We very much want attempts to make the chimneypiece more artistic and attractive, in its comparatively inexpensive forms, than it is to be found at present. The cheaper forms of marble chimney-piece, as usually designed, are enough in themselves to impart meanness and vulgarity to the aspect of an otherwise tastefully furnished apartment. The very lowest form of all, the "mantle sham," as it is called in furnishing ironmongers' language, which is considered good enough for cottages, lodges, and upper bedrooms, is certainly one of the very meanest-looking articles ever invented. A border of plain stone slab is far superior to the paltry mock marble chimney-piece of cast-iron.

In cases where a design of size and importance is to be carried out in connexion with the fireplace, this should, if possible, embrace the whole height of the room, and not appear merely as an insertion in the lower part of the wall. The fireplace opening, with its centre of bright flame, should thus appear as the basis and central point

of a large composition, which above may take the form of a niche, or series of niches, for statuary; of a stand for the display of articles of pottery, ornamental tiles, or other objects of beauty and interest. The chimney-breast-glass, so long considered the *ne plus ultra* of decorative treatment for this position, is in doubtful taste, more particularly as it is in a position where any one standing by the fire must be troubled with his or her own reflection, which is not always desired even by the vainest or the most beautiful, still less by those who want one or both of these characteristics. Designs of considerable originality and interest have occasionally appeared recently for this extended treatment of the fireplace design; one or two have been engraved in our pages. In general the complaint to be made against modern designs of this class is, that in seeking refinement and elegance they rather fall short of dignity and architectural character: an infusion of the large manner of the Middle Age fireplaces, without imitation in every respect, seems desirable, to raise the fireplace to something like its ancient dignity. Among old methods of treatment in large halls may be mentioned the combination of two fireplace openings, side by side, in one design,—a method greatly extending the accommodation for the fireside circle, and which certainly would be susceptible of very brilliant and effective treatment in point of design; but, considering the present price of coals, we cannot, in justice to our readers' feelings, enlarge upon such a topic.

Of the grate as usually designed there is little indeed to be said on architectural grounds; the majority of grates, large and small, costly and plain, are for the most part marked by entire absence of true taste in their design, and in the treatment of the material. Mouldings, which are eschewed very often in the marble pilasters and shelf forming the chimney-piece, where they would be quite in keeping with the material, and improve the effect, are, on the contrary, sedulously introduced in the iron grate, to which a different style of treatment would be far more suitable; and cast-iron wreaths and foliage are liberally bestowed, in vulgar profusion. These, in fact, often serve to hide more serious faults of structure and manufacture; and those who purchase grates are often surprised to find that the perfectly plain one is more expensive than the one with the pretty festoons, &c., which latter are, in fact, screens for bad workmanship. There is one point in regard to which the grate manufacturers hit upon the right thing, in the introduction of polished steel into the grate. No source of effect in itself can be better or more suitable for the situation, as it not only reflects and magnifies the glow and glitter of the fire, but reflects heat also. Still, this source of effect may be overdone, and some of the forms of "patent" grate, nearly all an expanse of polished steel, are gewgaw-looking when empty, and almost oppressively-heated looking when the fire is burning, at least for a room of moderate size; and the difficulty of keeping them bright is greater than the effect is worth. What we require generally in the treatment of grates is a less pretentious, less pronouncedly *drawing-room* appearance, and more attention to the nature of the material, which requires treatment in straight lines and in flat surfaces and sunk or slightly relieved ornament, rather than in those super-elegant flowing curves and cast-iron vegetation which form the staple of the ironmonger's "illustrated catalogue."

We have referred to the hearth as a space for ornamental treatment, but, in fact, coloured tiles are almost the sole form of decoration suitable to such a position; and the chief desideratum here is that the colouring should not be too bright or the design obtrusive; anything of such a character looks out of place in a surface, which if exposed to view, and not covered by some of the patent grate arrangements, is in reality a receptacle for dropped cinders. Tiles of brighter and more pronounced design may very fitly be introduced in the jambs or splay of the grate, where they enhance the cheerful effect of the fire, and furnish opportunity for a design with some motive appropriate to the situation.

Architectural unity and consistency of treatment in all its parts, and in relation to the various materials employed, is above all things what is needed, if we would remove the surroundings of the fireplace from the category of mere tradesman's wares, and revive, with whatever modifications, something of the architectural style and character which it has at former epochs presented.

SYMMETRICAL EDUCATION.*

The readers of the *Builder* already know a little about "the Golden Mean," to which Mr. Cave Thomas has devoted much attention; and we need scarcely say that the present volume is based upon this principle. We cannot venture, except in his own words, to give them any idea of the way in which he here reduces that principle to practical rules, results, and opinions, either in favour of a new system of education, or against more ordinary principles and ideas: we shall therefore transfer one or two leading passages to our pages, in order that the author may speak for himself.

The whole tendency of the technical system, according to Mr. Thomas, is to specialise and reduce men to mere machines; and to specialise is to narrow the sphere of vital action; for there are but two possible tendencies in nature, viz., either to excentration or to symmetry, either to the unbalanced or the balanced: the eccentric, the unbalanced, the disproportionate, are but different expressions for *special* development. The two opposite tendencies may be thus formulated:—

1. Beings in which the greatest number of faculties are concentrated in their mean or moderate degree of development, manifest the largest *general* powers.

2. Beings in which any special faculty, or group of faculties, are inordinately developed, exhibit some *special* aptitude, but are deficient in *varied* mobility, in *general* capacity. Their *specialisation* increasing as the excentration or disproportion constituting their individuality or characteristic increases.

Now, if the full import of these two positions be thoroughly grasped, the title "Proportionate or Symmetrical System" will at once be understood, indicating, as it does, a system essentially opposed to that which has so long been in vogue, viz., that based upon the misconceptions that bias in the human character should be cultivated, and that quantity and variety of knowledge are preferable to quality in education, to the regulated, symmetrical cultivation of the whole manhood.

If the popular notions on the subject of education be examined, continues our author, it will be found that they are, in the main, founded on phrenology; and under the supposition that this is a sound theory of the constitution of the mind, when it is nothing but a mere shaky hypothesis: hence tendencies in character resulting from accident and habit are attributed to the promptings of certain cerebral organs. These organs, confidently mapped out, are so numerous that it can scarcely be wondered if teachers and parents, whose notions are derived from phrenology, should be anxious to "cram" youth with all kinds of information, lest it should appear naturally deficient, *minus* any cerebral protuberances. Hence one of the principal motives of "cramming," and the origin of the absurd notion of the great variety of study necessary to develope the intellect. This is, indeed, one of the most absurd and fatal mistakes of modern times, and is as injurious to mental development as "cramming" the stomach is to digestion; the heal by action of the mind, as of the body, is impossible under such treatment. . . . . .

The proportionate or symmetrical system of education we are now advocating, the author elsewhere remarks, is based on that great and immutable science of definite proportional relation which obtains throughout the Cosmos. The leading positions of this doctrine, applicable to the subject in hand, are thus stated:—

1. That all wrong, imperfection, disproportion, are aberrations from *mean*, or *average* conditions. The mean, therefore, is the common measure of rectitude in all things, of the proportioned, the symmetrical, of the good, the perfect, the beautiful.

2. That any *special* excess in any system of being, necessarily involves a *special* defect: this results from a transfer or excentration of power.

3. That as the vitality of power in any system of being is a *fixed* quantity, any excessive expenditure of vitality, by one function or group of functions, must be compensated by inaction in others; or by the system generally, by a period of absolute rest; otherwise organisation will be impaired, the common store of vitality unduly drawn upon, and existence shortened. This expounds the great law of compensation, by which irregular activity in body or mind may be corrected and health restored.

That any *special excess* or any system of being necessarily involves a *special defect*, at once indicates the weakness of the educational system which would promote or develope *bias*. For it will at once be seen by (2) that any special aptitude of mind or body can only be developed at the expense of its proportion, its symmetry. The general efficiency of the humanity is impaired by such a course. The truth of this position is, in fact, frequently attested by the exclamation, "Oh, yes! he is very clever in that way, but a fool in respect to everything else." That we have a public superficially informed, crotchety, eccentric, incapable of observing or reasoning correctly, thinking deeply or seeing far ahead, is due to the absurd system of developing *bias*.

The cultivation of *bias*, of special intellectual or physical idiosyncrasies, inevitably tends to foster and increase what is evidently by (2) a predominance or disproportion in the man, and, therefore, to destroy that proportion or symmetry in which well-being consists, or that regal manhood which is neither in excess nor defect of anything essentially human.

An ill-natured critic, we may here remark, might curtly describe Mr. Thomas's system as an endeavour to introduce and establish a mean level of mediocrity suppressive of all talent, all genius, all superiority, either mental or corporal, and devoid of those stimulants to emulation and excellence in all and every direction which would bring mankind, in the aggregate, to a high level, instead of to a low one such as Mr. Thomas's system would. Nevertheless, we think there is much truth in his principles; but why *he* should scout phrenology as he does, one cannot well see. Even though not ourself satisfied, by any means, with phrenology as an analysis of mind, we think it is quite as much in accordance with Mr. Thomas's principles as the contrary; for where smallness of cerebral development and weakness of capacity are coincident, it does not follow that this leads to, or specially countenances, the further development of the more prominent faculties, and the neglect of the weaker. Quite the contrary; and we should think as many phrenologists keep the one way in view as the other. But we must leave such questions to be discussed by the phrenologists themselves with Mr. Thomas, and would only wish to say one word as to "the ideal man," or "the regal manhood," to which the author alludes; for this is his grand "pattern" of perfected manhood, right or wrong, which rules and regulates all his conclusions as to what is right or wrong, and true or false, in education, and everything else within the sphere of humanity.

Let us suppose that in adjusting the balance of political power on the globe, we were to exclude the Americas. However equitable and symmetrical such a *balance* might be made in itself, would it be a false balance or a true one? Everything depends on the expansion and completeness of the view we take. If we regard as a sphere what is only a hemisphere, we calculate without our host, and our idea is worthless. If we regard as "the whole man" what is only half the man as a true and integral whole, our conclusions are certain to be wrong. And from what Mr. Thomas here and elsewhere says, we rather fear he does so.

* Symmetrical Education; or, the Importance of just Proportion in Mind and Body. By W. Cave Thomas. London: Smith, Elder, & Co. 1873.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

MEDIÆVAL BRICKWORK OF POMERANIA.

The second ordinary general meeting of the session was held last Monday evening, at the Rooms, Conduit-street, when a paper was read by Mr. J. Tavenor Perry, Associate, "On the Mediæval Brickwork of Pomerania:" Mr. John Gibson, vice-president, in the chair.

Mr. W. S. Barber, of Halifax, and Mr. James Lemon, of Southampton, were elected as Fellows.

The Secretary (Mr. Eastlake) announced amongst other donations, the presentation, from Lady Tite, of a large water-colour drawing, which was on view, representing the various buildings erected by Inigo Jones, for which a special vote of thanks was passed.

After the reading of the paper, the Chairman, in inviting discussion, called upon

Mr. Street, R.A., who, in the course of his remarks, said that this Mediæval brickwork, of which Mr. Perry had ably treated, extended all over Germany, from the Baltic to the North Sea, and if he were to say anything at all, it would not be upon the buildings exactly in Pomerania, but out of it, although they were of the same description. Every one visiting Germany was immediately struck with the beauty of this brickwork; but wherever it was used, it seemed the fashion to make the most of it. He trusted that next year we should know more about the subject, though the younger members

of the profession, he thought, did not seem inclined to visit Germany, there seeming to be a want of interest in foreign art and architecture. He would like himself to know more about the internal furniture of some of these churches in Pomerania, this furniture being, as far as he knew to the contrary, the most interesting feature, consisting of old altars, vestments, &c., everything, in fact, being left in the most perfect state to show what a Mediæval church was like before it had been ruined. The gateways, too, were among the most important things which immediately struck visitors. These brick buildings were really of a most picturesque character; and one could not help admiring their extreme beauty, the gable at Prenzlau being of great excellence, and the tracery of so simple a character. In conclusion, he moved a vote of thanks to Mr. Perry for his paper, regretting, at the same time, the paucity of attendance.

Mr. Charles Fowler, in seconding the motion, said that he was not very familiar with the exact places in Pomerania to which Mr. Perry had referred, but there were other towns, he thought, to which his remarks would apply. Stargard, however, he, with Mr. Perry, had seen; and when he visited it twenty-five years ago, it was a quaint old town, the picturesque buildings of which seemed to him to be of the fourteenth century. The old brick walls were remaining almost intact; and his theory was that the style of architecture was imported from adjacent countries, there being but few earlier buildings than those of the fourteenth century in Pomerania; but possibly this might be explained by the inference that during this century, when the country was in a high state of prosperity, the early buildings were pulled down in order to make room for the magnificent churches which were then erected. Mr. Perry had not directed the attention of the members to domestic buildings, of which there were some fine specimens, though not of a large variety, being of a gabled character, the gables being the feature of the building; but where there were a great number of them they were extremely picturesque. The quality and character of the bricks employed, Mr. Perry had called attention to, but it would have added greatly to the effect of the buildings, he thought, if they had been made of a finer colour, and if they had been smaller in size, large-sized bricks being difficult to handle.

Mr. Phené Spiers was of opinion that there were other towns in the same country, such as Lubeck and Danzig, the style and character of which were precisely the same as those which had been mentioned. He confessed that, from a personal examination of the buildings, he had come to the conclusion that they were imported into the country, and also imported into a place where previously stone was the chief material employed. With regard to the town of Neubrandenburg, he thought it was of the fourteenth century. If the style was imported, it soon became a natural one in the country. With regard to the peculiarity of carving bricks, in England we very seldom thought of carving bricks; but it was very certain that in several parts of Pomerania brick was carved. In the churches at Danzig the mullions rose to a height of 70 ft. beyond that of the iron doors, which was certainly surprising. The tracery, too, was of an elaborate character; and, in conclusion, he regretted that so very little was known of this interesting brickwork.

Mr. Fowler said, with regard to carved bricks, his experience was, that upon a careful examination he had come to the conclusion that no bricks were carved which had been burnt.

Mr. W. H. Brewer stated that the paper had been of great interest to him, for it had pointed out one of the difficulties under which architects laboured during the Middle Ages with regard to the material employed; they not only had to use a certain material, but had to find out how to use it. They knew, however, that if they had to build a church, living in the thirteenth century, they were to build it only in that particular style, thus overcoming the greatest difficulty an architect had to contend with at the present day. The use of brick to these Gothic architects in the Early Ages was really one of great difficulty; but when they came to employ stone, it was interesting to note what use they made of it, and how the style developed itself. He ventured to assert that the style developed by the use of brick was not of so fine a character, being an inefficient style altogether to that which developed itself in the employment of stone. Gothic architecture was really more applicable to stone than brick, and it might be looked upon more as a stone style than a brick one. The finest specimens of brickwork of the Middle Ages were to be seen in the old Tudor houses in England.

Mr. Street said, that with regard to the tracery, these brick works were only imitations of tracery, and in the gables all over the buildings there were to be seen nothing but traceries, the architects having the material at hand which so easily lent itself to the making of tracery. Brick traceries were also to be found in the north of Spain, and again in the south of France.

Mr. Thomas Morris thought that history was really the basis of any kind of architectural study; and it was very essential that the subject of which the lecturer had been treating should be so defined that, when we spoke of brickwork we should not speak of terra cotta, in which the Italians excelled. It appeared to him that when things were moulded, and carried by the score or the thousand from one part of the Continent to another, it was quite possible that some of the decorative portions might have been carried to Lubeck, and there been disseminated into the northern parts of Europe. He thought that this was a point concerning which history might be able to show in what direction such a style travelled.*

THE PROFESSION IN IRELAND.

ARCHITECTURAL ASSOCIATION OF IRELAND.

THE president of this Association, in his opening address, said,—What are the prospects of the profession? You have certainly complainings, and justly. You have also strong proofs of prosperity on every side. The number of architects is increasing every day. You should take courage from the fact, as it is pretty certain that architectural practice is becoming more and more general,—in fact, becoming a necessity of the age. I need scarcely dwell on the fact patent to you all, that the influence of the profession is being felt day by day; and though you occasionally hear statements made relative to the profession, you find on examination that these observations are made oftentimes without sufficient ground on the part of the individual; oftener still, without any knowledge of the subject. I think it only reasonable to expect that before men criticise, they should learn even a small portion of the knowledge which an architect should possess. Men of real influence seldom or never indulge in such criticism, but place themselves unreservedly in the hands of their professional advisers.

I would also mention that the influence of the press, as a rule, has been everything that could be desired in supporting the dignity of the profession. I hope it will continue in the same course, never sparing us when our buildings depart from their proper uses and truthful principles. You may then be satisfied that the increased influence of the architect, founded on his improved attainments, proves that the profession of architecture is fairly prosperous, and that no one of ability need fear to succeed in it. I shall not dwell on the fact of how we are to get practice, or how act in our intercourse with our clients and those who may assist us to carry out our designs. Then, having formed some idea of how to represent the work to your client, you should perhaps consider our relations with them and all others in our paths (professionally). The latter, Professor Cockerell, gave it as a rule, than which I think none could be better,—"To be an artist amongst gentlemen, and a gentleman amongst artists."

As to getting practice, almost every man's experience in this way is different from his neighbour's. Competition afforded to many rising young architects a means of distinguishing themselves in early life, although there is a great risk; yet I think the principle is a noble one, if only properly carried out.

When you have got clients, you must do all in your power to realise their wants, fall in with their views, hold out against them when you feel that the result will not be satisfactory; and in the case of prominent buildings, it probably will be better to retire from the work altogether than that your name should be associated with that which is opposed to the true spirit of art. It was very delightful to meet with intelligent clients who clearly stated their wants, and rendered all the assistance in their power; and it was still more delightful to fulfil successively the conditions required by such clients. The work of the architect should not be confined merely to the designing and superintending the building itself, but the whole work of decoration and furnishing should be left in his hands, for it is very sad and very discouraging to the architect to find that when he has tended and cared a building to completion, he found that the fittings and decoration were utterly out of keeping with the rest,—often in a different style altogether. This should not be so. To remedy this state of things, fine art must be studied by the general public. This study can give the greatest delight. By it you learn to see beauty where before all was blank. This study produces a spirit of gentleness and refinement, and without it you can hardly realise to the full the beauties of creation. The earlier in life you get this power the more readily you learn to understand those beauties. You then can sympathise with the efforts of the artist, and a more charitable feeling will arise when you witness defects, as you will be better prepared to understand the difficulties of his position. You should also study art, and support professors in every possible way; for this reason,—that they live for their country's good, and it is the only thing that shall remain to give a just idea of our state when all else shall have passed away. Lose, then, no opportunity for the cultivation of this art, and a training to appreciate works of art. Architecture is the history of civilisation; it was the first necessity,—it is the real and only foundation of fine arts, and should be the guiding spirit to the others, which were created for her decoration.

The late Cardinal Wiseman, speaking of architecture, says:—"It may seem superfluous to observe in writing of architecture, that it obviously divides itself into two branches,—the purely artistic, and the constructive or scientific. If, on the one side, it seems to descend towards the class of mechanical pursuits; on the other, it rises so high as to command its other two sisters, and to be almost necessary for their perfect existence. I have sufficiently intimated that one great difference between ancient and modern art, including Mediæval art, under the first division, consists in this,—that ancient art was public, and modern is private. Galleries of sculpture were anciently unknown. Its most matchless pieces were in temples or in public halls, such as those baths, or in open gardens, perhaps, adorning fountains, but generally accessible to the most plebeian eye; but this very circumstance shows how architecture is in the highest sense a fine art, and must always necessarily grow as such commensurately with the advancement of the other two branches of art of design."

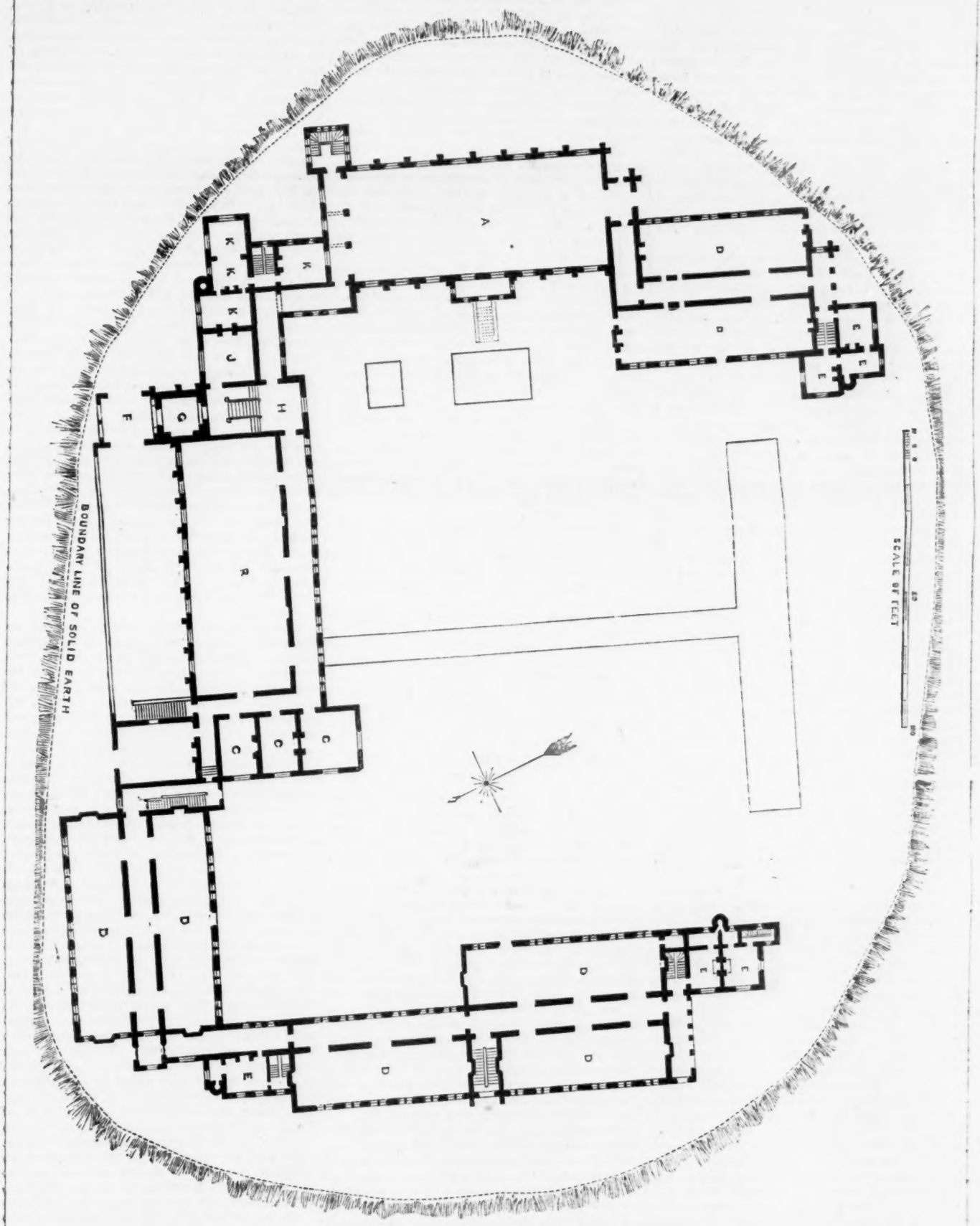
It is sad to think that in our universities the fine arts receive none of that consideration which is their due, and which they should receive, if the education afforded is to supply the intellectual wants of the age. In England, France, and most other countries of Europe, those arts have always received due attention; but in Ireland we are very far behind. I am happy to see that in one of the universities attention is being paid to fine art and antiquities, and I hope the day is not far distant when our "silent sister" will remove the reproach that practically the fine arts are expunged from her programme.

The Government of the country do very little for art education. It is absolutely necessary that museums should be established, and public lectures instituted, if we would hope for a real knowledge of art in our midst.

However, notwithstanding all the drawbacks, I am happy to congratulate you on the exertions you have made in the past, and the success attending those efforts. It must have been a source of great pleasure to you to find your effort so well assisted by many of the senior members of the profession; and the friendly aid given in several ways by the Royal Institute of the Architects of Ireland must also be encouraging; and, though last, not least, the friendly interest displayed by your friends who have honoured you here this evening, must be to you a proof that if you work earnestly for the advancement of the fine arts, you need not fear that your efforts will go unrewarded.

* It was announced that at the next meeting Mr. Simpson would read a paper "On Chinese and Japanese Architecture," owing to Mr. J. Scott Russell, who was to have read a paper "On the Central Dome of the Vienna Exhibition Building," being called away to Vienna.

The John Stuart Mill Memorial.—The execution of the statue of Mr. Mill has been entrusted to Mr. J. H. Foley, R.A.



A. Dining-hall. C. Class-rooms. E. Sergeants' Quarters. G. Entrance-hall. J. Library.
B. School-room. D. Dormitories. F. Porch. H. Principal Staircase. K. Principal's Residence.

THE LAWRENCE ASYLUM, OOTAKAMUND.——*Plan of Ground Floor.*

THE LAWRENCE ASYLUM, OOTAKAMUND.*

This building has been recently erected by Government in commemoration of the late Sir Henry Lawrence, at a cost of 50,000*l*. It is intended to provide a home and education for the children of the European soldiery, and affords ample accommodation for 400 boys. The scale of room is as follows:—

School-room space, 9·7 superficial feet per boy.
Dining-room ditto, 11 „ „
Dormitory ditto, 5·7 „ „

Dimensions of dining-room, 107 ft. by 40 ft.
„ School-room, 96 ft. by 36 ft.

The erection of this building required much labour and skill, being built at a height of 8,000 ft. above the sea level.

The architect was Mr. R. F. Chisholm, of Madras.

* See p. 927.

ART CRITICISM.

In a recent work on the science of language, Professor Max Müller, in illustration of the manner in which a primitive root may be traced in its wanderings through the various later tongues, takes as an example the root AR (to plough). After finding it represented in the Sanscrit by a word meaning labour in general, and under various modifications of sound in all the Indo-European languages, bearing the same or cognate meanings, it is discovered in the Anglo-Saxon word *Ar* (hence oar), to propel a ship through the waves, to *plough* the deep; in the old English word *ear*, in the words *earnings*, *earth*, &c., and from the same root, come our modern words *Art*, *Architecture*.

Art cannot exist without labour; labour, however, which in itself ministers to no bodily want, serves no physical necessity, but labour which is performed because man has more than a mere animal life, something distinct and superior which craves food and exercise, and affords him the highest enjoyment, because he has a spiritual being which can partake of and assimilate the good, the true, and the beautiful.

Ethics, science, and art are the three provinces of mental culture, which, each having a distinct and separate centre, yet overlap, intermingle, and partake of each other, and there exists between them a strong analogy and natural harmony. The first care of man has ever been and must ever be to satisfy his animal wants, the necessary support of his bodily existence, but the mere eking out of material existence has satisfied only the very lowest types of the species. Wherever the true dignity of our birthright can be traced men have craved for some sort of intellectual pleasure, and all intellectual pleasure is more or less identified with the perception of the beautiful. As man has advanced on the path of civilisation he has endeavoured the more earnestly to give grace and comeliness to the works of his hands, to surround himself with things of beauty, to polish the mirror of his soul so that it may receive and reflect impressions of the beautiful in its highest development, and in thus cultivating the æsthetical faculty within him he is the more able to comprehend the great source of truth from which his inspirations spring.

It is the perception of the beautiful, either through the senses or memory, that gives charm to art; and it is the moulding and fashioning of his material through its inspiration that exercises the genius of the artist, whether it be in filling the eye with graceful form, skilful composition, or harmonious colour, or filling the ear with "the inarticulate mystic speech of music," or stirring the soul through the measured rythm of poetry. Nay, something of a kindred pleasure and emotion to that which the perception of the beautiful excites may be traced in the delight some minds take in the exact sciences, the apprehension of the beautiful in the abstract; the idea of unity, design, variety, and harmony in those sciences which treat of order in the universe of created things.

When under the influence of that which is exquisitely beautiful we are drawn out of ourselves towards it, it takes possession of our souls; and this emotion excited within us by the power of the beautiful in insensate nature, or in skilful art, is of the same nature (differing only in quality and degree) as that which is kindled within us by the power of the good, the noble, and the fine in living action. The godlike in the soul is the beautiful in morals; and its contemplation evokes a higher emotion than the sensuous beautiful, inasmuch as spirit is nobler than matter. And yet there exists a certain relationship between our perceptions of the external and sensuous beautiful and the inner and moral beautiful, betwixt material beauty and grandeur, and spiritual loveliness and greatness: they are emanations and manifestations of God, the source of all that is good and true. It is the setting forth with power and skill this moral beautiful that has exercised the genius of the great workers among men. "Was it not to preach this higher that sages, and martyrs, and poets, in all times have spoken and suffered, bearing testimony through life and through death to the godlike that is in man? and in the godlike only has he strength and freedom." Outer nature is only the clothing and manifestation of spirit, of an inner life; and the inner life, with its hopes and fears, its moral powers and spiritual aspirations is the true field of action of the poet, but only in a relative degree of the painter and sculptor. Representative art in its first degree is content with the mere evolving of outward beauty, and the charm which such is calculated to produce on the perception of the beholder is its chief motive; but in its higher aspects it aims at a moral beauty, the expression of emotion and passion, the touch of nature which makes all men kin.

Yet while this element of sentiment forms a component part in the highest efforts of representative art, it receives its full and proper development in poetry. In this matter art and poetry to a certain degree overlap each other, for while the raising of emotion by sentiment is sometimes a purpose of the artist, and the realisation of a scene or action the effort of the poet, yet in the main the creation of a beautiful work of art is the true vocation of the one; the evoking of sentiment and emotion is the true vocation of the other. Both, indeed, deal with the outer and inner life of man, but it is the assurance of the "relativity of our perceptions," in regard to the material and sensuous beautiful which give confidence in his work to the artist, whilst poetry appeals more to our inner life, the life we live alone and apart, yet which finds communion from soul to soul by means of sympathy, and it is the assurance of the *relativity* of our moral perceptions that gives to the poet his existence. A true sense of the material beautiful is essential to constitute an artist,—a certain sympathetic and emotional temperament is essential to constitute the poet; the one deals with succession of thoughts and harmonies, the other with thought crystallized in material form.

The sympathy and aptitude to emotion must exist in the soul ere art steps in to intensify or exalt it; but where the responsive cord is wanting, the appeal is in vain. The poet may not be a good art critic, nor the artist a judge of poetry.

"Every man is the measure of all things to himself." No criticism on a work of art can be true and just unless the critic can place himself at the point of view of the artist, unless he can sympathise with the feelings, emotions, and objects of the worker. Education will not *produce* this sympathy; the germ must exist in the soul before it can spring up and be cultivated.

THE GOLD AND SILVER MINES OF SCOTLAND.

Within the shadow of "dark Lochnagar" the Marquis of Huntly has commenced prospecting for silver. He has employed labourers, under the guidance of an expert, to reopen a silver-mine which was worked with partial success about the middle of last century. The undertaking of the noble proprietor is anxiously watched by the inhabitants of Dee-side, who, should it prove successful, look forward to a new field for labour being opened in their midst. The most successful prospector for silver in Scotland, in later times, was Sir John Erskine, of Alva, who discovered a valuable mine of silver in a ravine of the Ochil Hills, which formed part of his estate. The silver in this mine made its first appearance in small strings of ore, which, being followed, led to a mass of that metal. A part of this had the appearance of malleable silver, and was found, on trial, to be so rich as to produce 12 oz. of silver from 14 oz. of ore. Not more than 50*l.* had been expended when this valuable discovery was made. For the space of four months, it is credibly affirmed that the proprietor obtained ore from this mine to the value of 4,000*l.* per week. When this mass was exhausted, the silver ore began to appear in smaller quantities, symptoms of lead and other metals presented themselves, and the search was for a while abandoned. Sir John, however, drove another shaft in the vicinity of the first; and the result of the undertaking is made plain by the following anecdote. Walking over his estate with a friend, Sir John pointed out a great hole, and remarked, "Out of that hole I took 50,000*l.*" Then walking on, he came to another excavation, and concluded the sentence, "I put it all into *that* hole." In 1767, Sir John's nephew presented a pair of silver communion-cups to the church of Alva, with an inscription, which may yet be read, stating that they were fashioned from silver found in the parish.

The earliest mention of gold and silver mines in Scotland occurs in the reign of King James IV. In the royal accounts for the years 1511, 1512, 1513, in connexion with the gold and silver mines in Lanarkshire, there are payments mentioned to the "master-finer," "the finer," and "the melter of the mine." In 1561, when a lease of the lead-mines of Glengoner and Wanlockhead (Lead Hills), was granted by Queen Mary to John Acheson, "master cunyer," and John Aslowan, burgess of Edinburgh, they were bound by agreement to deliver forty-five ounces of fine silver for every thousand stone weight of lead ore. In six months the leaseholders delivered at the Mint "nine hundred ounces of utter fine silver." In 1563, the queen granted to John Stewart, of Tarlair, Banffshire, and William his son, licence to "win" all kinds of metallic ore between the river Tay and the Orkney Islands, and in the event of their finding any gold and silver where none were ever found before, the product was to be brought to her majesty's Mint; "the unce of gold for ten pund, and the unce of utter fine silver for twenty-four shillings" (Scotch). Of this grant nothing further is recorded, but it may be taken for granted that the Tarlairs failed in their undertaking, as also did Eustache Roche, a Fleming, who entered into a contract with King James VI., whereby he was empowered to break ground anywhere in search of the precious metals. It was not till 1593, when Thomas Foulis, goldsmith, in Edinburgh, who was in those days to King James what the Bank of England has often been in modern times to the British Government—a ready resource when money was urgently required for State purposes, that the search in Scotland for silver and gold was industriously conducted. The king, in consideration of loans—and very heavy ones they were,—granted to Thomas Foulis, a lease of the gold, silver, and lead mines of Crawford Muir and Glengower, for twenty-one years. During his lease, he worked them well, and in time they passed through his granddaughter into the possession of her husband, James Hope, of Hopetoun, the founder of the noble house of Hopetoun. The estate has long been one of the best in Scotland.

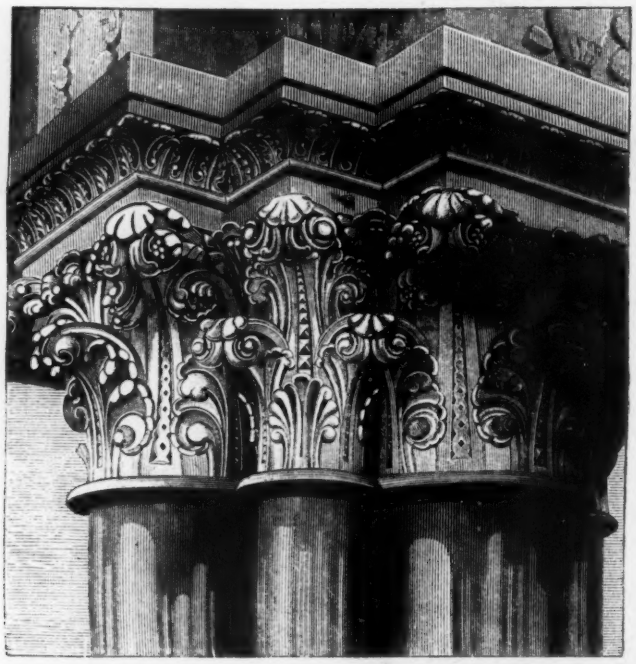
While Foulis was mining and prospecting, an Englishman named Bulmer, with the licence and favour of Queen Elizabeth, and a patent from the King of Scots, set seriously to search for silver and gold throughout the border country of Scotland. The enterprise was ruined by his personal extravagance, according to a record of the period. "Upon Glengoner Water he builded a very fair country-house to dwell in, and he brought home a watercourse for the cleansing of gold and silver; by the help thereof he got much straggling gold and silver on the skirts of the hills and in the valleys, but none in solid places, which maintained himself then in great pomp, and thereby he kept open house for all comers and goers: as is reported, he feasted all sorts of people that thither came." Here ends a brief notice of silver-mining in Scotland in the days gone by. The mines were in many instances worked with a profit; but one thing must not be forgotten, the men who worked upon these mines were, to every intent and purpose, slaves. Reference has been made to the silver-mine at Alva, the property of Sir John Erskine: one Alexander Steuart was bestowed as a gift on Sir John with a view to his being employed on the silver-mine, and his *proprietor* was enjoined to fit a metal collar upon the man, bearing the following inscription:—"Alexander Steuart found guilty of death for theft at Perth, the 5th of December, 1701, and gifted by the justiciars as a perpetual servant to John Erskine of Alva." This collar was dredged up in the Firth of Forth many years ago, and is now in the museum of the Scottish Antiquarian Society. Even until the year 1775 the restraints upon the personal freedom of miners and salters—the villainage of the Middle Ages—were in full force until extinguished by a statute of George III.

Three hundred years ago gold and silver were found, but not in abundance, on the mountain sides where the Marquis of Huntly is at present prospecting. There is no doubt of the existence of veins and nuggets of these precious metals in the mountainous and moorland districts of Scotland, but will the value of the "finds" be able to overbalance the amount expended on the labour employed? That is the question.

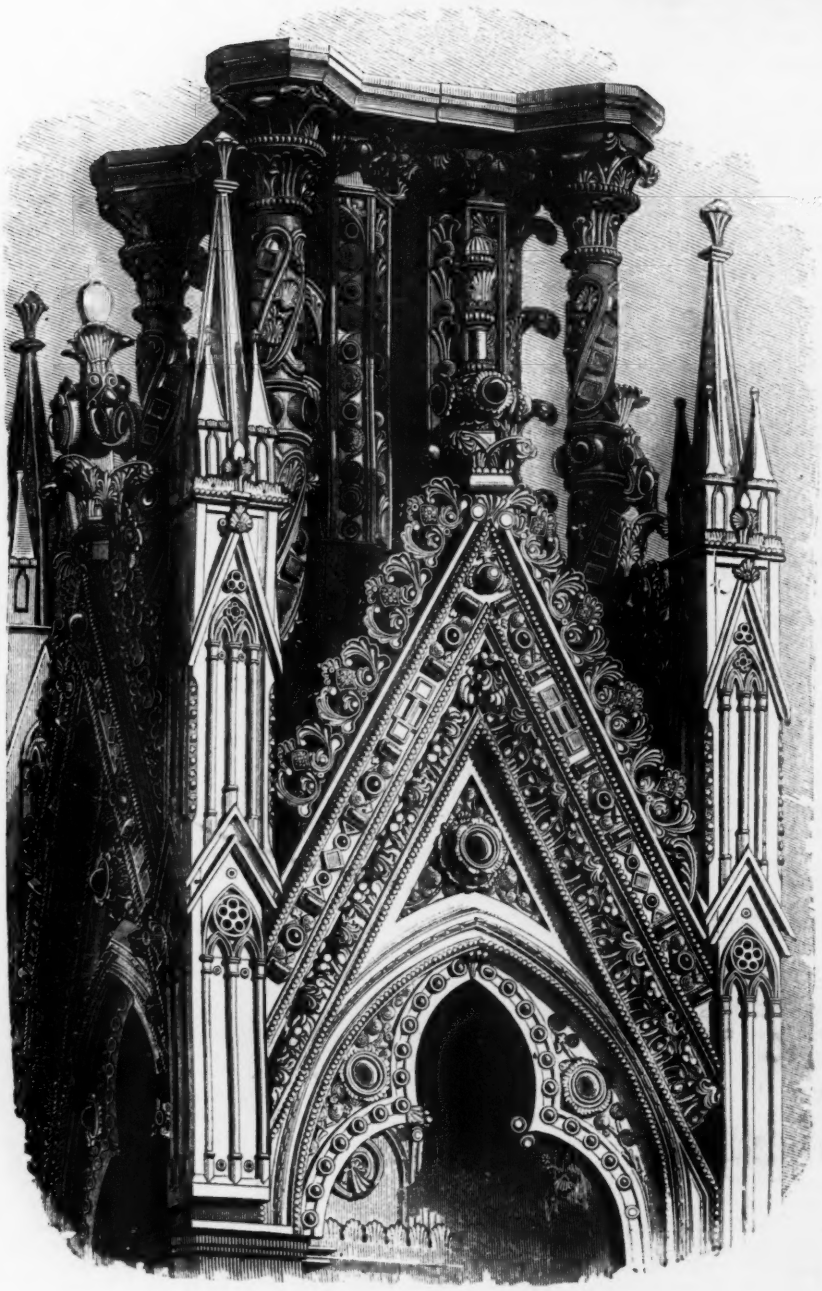
SCHOOLS IN THE COUNTRY.

Worthing.—The new schools in connexion with St. George's, Worthing, have just been opened. The accommodation is for 208 children, without residences. The total cost, including fittings, architect's fees, &c., but exclusive of ground, has been about 1,069*l.*, or 5*l.* per head. Mr. George Truefitt was the architect; Mr. Smith, of Worthing, the builder.

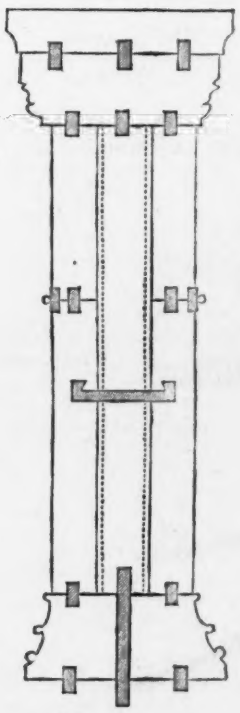
THE PRINCE CONSORT NATIONAL MEMORIAL, HYDE PARK.

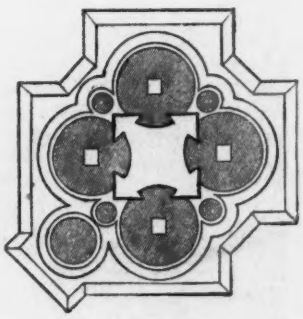


Capital of Great Pier.



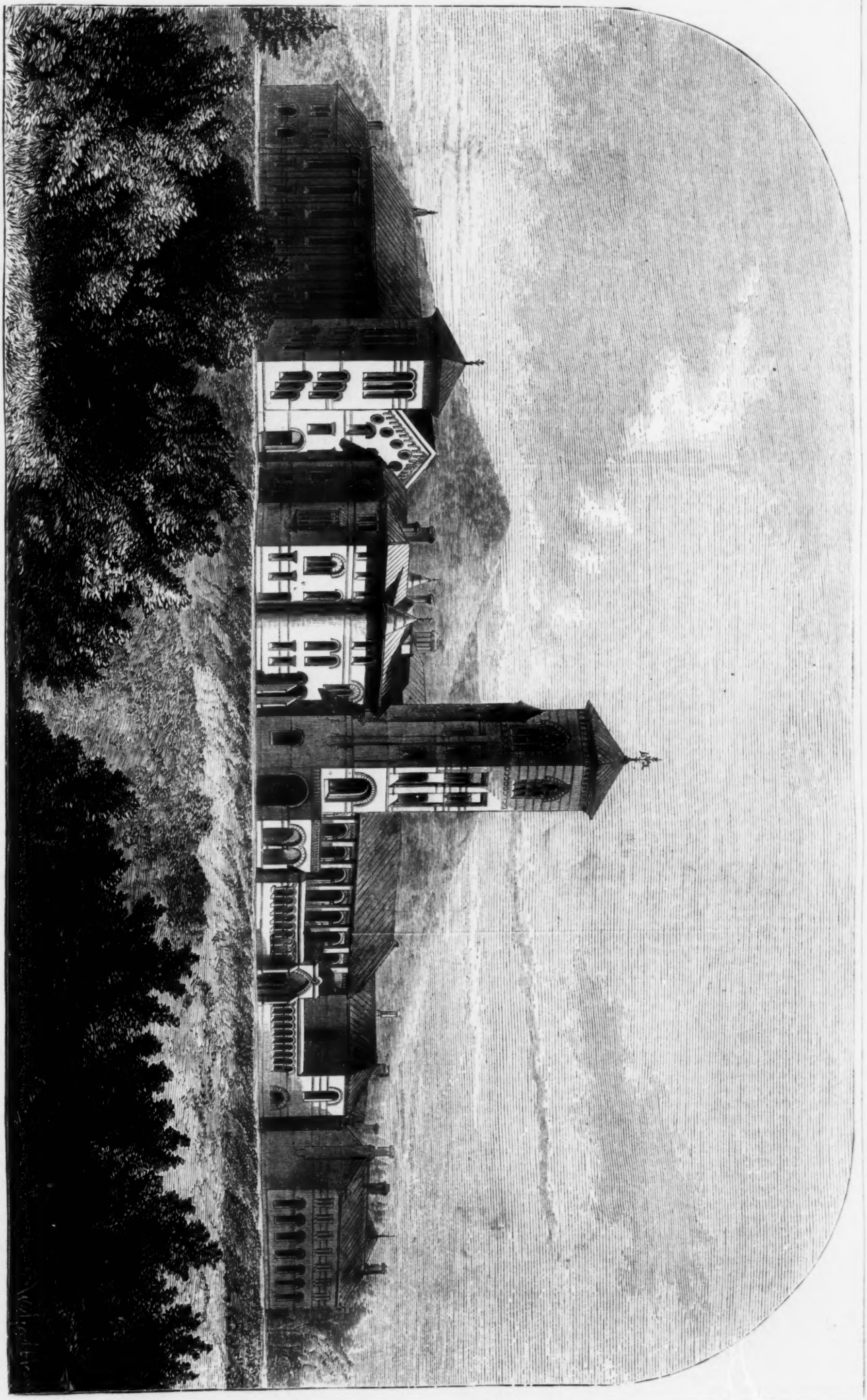
Canopy of Niches in the Spire.





Plan and Section of Pier.

[See p. 917, *ante*.



THE LAWRENCE ASYLUM, OOTAKAMUND, MADRAS PRESIDENCY, BRITISH INDIA.—Mr. R. F. Chisholm, Architect.

POSITION OF THE NATIONAL ARMOURY.

Sir,—Allow me in the name of all lovers of art and advocates of education, to thank you for your observations respecting the collection of the late Lord Zouch, and the present state of the National Armoury in the Tower. I can testify to the truth of every word you have said in condemnation of the red tape system which compels the authorities to regard our priceless antiquities as "stores" in a "fortress," instead of instructive treasures in a museum, and in exposure of the constant peril they are in of destruction either by fire or water.

I am weary of representations to the War-office, having found them ineffectual from the days of Lord Panmure to those of Mr. Cardwell, although I can produce official acknowledgments from nearly every administration of the justice of my remonstrances, and the desire of the authorities to remedy the evils complained of.

It is unnecessary for me to occupy your space by repetitions of the facts and arguments which have already appeared in your columns, and been re-published in my "Recollections."

For your constant and strenuous support I am deeply grateful, and if the public press generally would take up the subject, some hope, I have private reasons for believing, might be entertained of the reformation of the present "penny wise and pound foolish" system; but nothing, I am assured, will be done except through "pressure from without."

The Government has suffered the matchless Meyrick Collection to be dispersed without purchasing a single article. That it will avail itself under the present circumstances of the patriotic offer of Lord Zouch is exceedingly problematical.

An average income of nearly 3,000*l.* per annum is derived from the exhibition of the armour in the Tower alone, and of this sum not one shilling is set apart for the increase and improvement of the collection. Contrast this with the inclosed extract from the return to Parliament, ordered some year or two ago by the House of Commons, of the expenses of the South Kensington Museum. "The amount expended in purchases of works of art and science, books, &c.," is therein stated to have been 224,873*l.*! independently of the cost of arrangement.

The only self-supporting exhibition in the metropolis is not allowed to be benefited by its own income. J. R. Planché.

College of Arms.

"*South Kensington Museum.*—From a Parliamentary return ordered by the House of Commons on the 14th ult., the entire cost of buildings, including repairs of buildings for schools, appears to amount to 306,372*l.*; the cost of arrangement, which includes management and expenses for the circulation of objects of art amongst 107 local schools, 630,555*l.*; and the amount expended in purchases of works of art and science, books, &c., 224,873*l.* Gifts to the museum are estimated at 160,000*l.*, in addition to the 100,000*l.* given by Sir Joseph Whitworth for scholarships. Objects on loan are estimated to be of the annual value of 300,000*l.*, and since the foundation of the museum it has been visited by 9,056,818 persons."

SOMETHING ABOUT IRON.

Mr. Morris, manager of Dallam Forge, has read a paper before the Warrington Literary and Philosophical Society, entitled "Notes on Iron: its Sources, Processes of Manufacture, and a Few of its Characteristics." We print the earlier portion of it. He said: What is this material called iron; this most useful of all metals,—the intrinsic value of which exceeds all others, and which, in proportion to its use, should be the cause of progress of civilisation in the world wherever it is manufactured; and that the amount of its consumption by any nation, both in times gone by and at the present day, indicates very truly the degree of its attainment in the arts and sciences? If we ask the geologist, he tells us that it impregnated the waters of the old red sandstone period, and tinged with rusty red the whole of that system; that it now appears in the segregated form of thin layers and bands of ironstone; that its ores are found more or less in all parts of the world, either as beds in the sedimentary rocks, or in the massive deposits in the olden rocks, that the United Kingdom derives its principal supply from the earthy carbonates of the coal measures, from the carboniferous formations where some particular coal-fields possess large deposits of rich hematite ore. The meteorologist tells us the sun and the atmosphere played a most important part during the carboniferous era, and that now we are consuming the millions of years past bottled-up sunlight in the making of iron. Again, iron in the shape of falling meteors has been found, and from one of these bodies a Persian emperor had made two sabres, one knife, and one dagger. This iron of lightning or thunderbolt could not be worked up by itself, but must have been mixed with one-fourth of common iron before the Tubal Cain of that day did his master's bidding. It would be a wrinkle worth knowing how he obtained the mixture.

Coming to our nearer friend, the metallurgist, he lets us know the numerous combinations and analyses of the particular metal you wish to study; what mechanical and chemical sciences are involved to complete the separation and evolve the metal to that condition of purity desired by the manufacturer; what flux will best suit to form a glass with the multifarious ores during their fusion in that huge laboratory, the smelting-furnace; and that without flux to separate the earthy matter from the ores, glasses would be formed, instead of the carburet of iron and slags; and that the best-known flux for nine-tenths of the ores is limestone, which is incapable of holding iron in solution at high temperatures; that there must be blown, under pressure, from six to ten tons of atmospheric air in the furnace to produce the required oxygen for the reduction of one ton of pig iron from the ore. The pig iron the finished iron manufacturers take in hand, and by two distinct processes convert it into bars, plates, wire, &c. We have arrived now at the puddling process, which is replete with interest, consisting, as it does, of converting cast metal into malleable iron. The present system of puddling, as carried on almost universally, with few modifications (which shall be named), was invented by an ironmaster of the name of Cort, about the year 1780, the bed of whose furnace was made of sand, consequently the carburet was refined, many of its impurities especially the carbon which is the metalloid causing fluidity, was driven from it; hence, when the pig iron was melted it assumed the form of grain. If the carbon had been left in the pig metal the bed of the furnace could not have stood; besides, silica is fatal to iron, causing what is technically known as shortness or extreme brittleness. The deteriorating influence which sand and silica had on the iron when worked in contact with it was seen some years afterwards by Mr. Samuel Baldwin Rogers, who introduced the present system of iron bottoms to furnaces, which eventually did away with the finery process. Both of these gentlemen died in poverty, yet their inventions in their day were as much a desideratum, and were the cause of greater revolutions in the iron trade of that time than the Bessemer process or Dank's rotary puddler in our time. Many imagine that the gentleman with the cloven foot invented puddling, and I confess that for four or five months in the year it is one of the most distressing processes to the physical system of all manual labour, yet puddlers do not all stagger from the furnace fainting at the age of forty, as a certain special newspaper commissioner would have us believe. These joint inventions were the means of this kingdom taking the lead of all other nations in the iron trade, for up to this time we were dependent for our supplies upon Norway, Russia, and Sweden. From the latter place even now a large amount of their produce finds its way into England. In describing this puddling process it should be explained that the furnace is divided into two compartments, separated by a bridge about 12 in. thick, and 14 in. high. Over this the flame passes it from the grate, and comes in contact with the iron, and after it has done duty there passes round the boilers, generating the steam necessary for driving the machinery required for forging and rolling the iron. The chamber or compartment the pig metal is charged with, consists of iron plates forming the bottom and sides, which are lined with refractory slags rich in oxides of iron. In changing the heat, slags and scales from the hammers and rollers are thrown on the hearth or bottom, and on this the charge of pig-metal, consisting of 510 lb. to 540 lb. Fuel is then thrown into the grate, and in about twenty-five or forty minutes this carburet of iron becomes liquid, and assumes the form of a molten plate of iron some 1½ in. to 2 in. thick. Being heavier than the slags, the latter pass through it, and rise to the top. In passing, the oxygen contained in the silicates combines with the carbon of the iron, and decarbonises it; but unless the iron is agitated it will not become malleable. Hence the puddler, with a bar called a rabble, agitates the metal, and brings in contact the oxygen of the silicate with the carbon and other impurities of the iron. As the carbon is leaving the metal, its atoms expand and become of less specific gravity, and it throws off carbonic oxide gas, the blue flame of which is plainly seen by any one who watches the process. The puddler at this stage must be incessant in his operation, for the transformation scene is coming, and the crude iron is becoming malleable. The boiling of the mass is kept up by the fresh energy of the puddler until, as the carbon diminishes, the atoms of the iron begin to knit or agglutinate together in a soft spongy consistency, the cinder taking the place of the once molten iron. The iron is now as sensitive to oxygen as a tropical plant would be if placed in a temperature at zero, and as the human lungs would be if inhaling pure oxygen: it lives, as it were, too fast. It is at this point that smoke-preventers are puzzled; but a deoxydising flame is kept on the iron while it is being kneaded and divided into balls, preparatory to being brought out of the furnace; and, when done, the lump is taken to the hammer and beaten into the required shape for rolling it into the puddled bar of commerce. This operation is called shingling. From what has been said you will readily understand that the puddling operation consists of chemical combinations and mechanical application; and the inventions brought forward to assist the puddler in his part of the business are legion. The schemes tried to prevent smoke, save fuel, &c., may be counted by scores. Quacks by the dozen have sprung up with physic to throw in the molten iron during the process, to drive off the deleterious substances, the one idea being that the iron would have a greater affinity for their dose than it had for the metalloids, carbon phosphorus, and silicon, and so leave the iron pure. None of these recipes, however, have been so effectual as to warrant their continual and general use. Mr. Bessemer some twenty-five or thirty years ago accomplished the grand idea of forcing air through a molten mass, anticipating that the oxygen of the air would decarbonise the carburet and give him malleable iron; but he failed, for when the iron had given up its last equivalent of carbon to the oxygen it commenced to burn it up. Besides, it lacked the kneading, or mechanical part of the operation. The chemical part he got over so far as to produce a metal thoroughly tenacious; and its resistance to wear proves it to be the most durable and economical material for railway and other purposes. This invention of Bessemer's awakened metallurgists, and gave rise to several inventions for steel-making, but up to the present time there is only one invention of any practical importance, and that is the Siemens-Martin process. About the same time as Bessemer was completing his inventions, two gentlemen,—Mr. Tooth, of London, and Mr. Walker, of Wolverhampton,—brought out patents for oscillating and rotating puddling furnaces, which proved a step in the right direction. Somehow they got across, and their scheme was dying when Mr. Menelaus, of Dowlais, bought up their rights, built a forge, and made some good iron.

HEATING HOTHOUSES WITHOUT COST.

We have long looked towards the utilisation of the enormous amount of heat (as also power) now wasted, and have pointed out directions in which such a result seemed possible. A writer in the *Garden* has described a notable instance in which this is being effected. We will condense his account. He says from Dromore, in Ireland, the new system of lime-kiln heating hothouses is spreading throughout England and Scotland, and kilns are being built daily. 1,000 ft. of piping were recently heated under difficulties at Manchester. Since that great show other kilns have been set to work in various parts of England and Scotland. I have just heard of one near Edinburgh that heats a series of houses at different levels with the utmost ease, and to the entire satisfaction and great surprise of all concerned. Many distinguished horticulturists have met at Hatfield House to see a kiln heat 7,000 ft. of 4-in. pipes, extending through a series of vineries and other houses, and running in various directions out of doors. The kiln was 8 ft. deep and 6 ft. in diameter, and it is proposed to give it 3,000 more feet of 4-in. pipes to warm. There

could be no question as to the power and sufficiency of the heat provided by the kiln. Mr. Cowan also purposes adding still more to the potency of his boiler by sinking it lower into the glowing heat of the lime-kiln. The sides of the kiln are so intensely hot that if a series of boiler-rings can be introduced into the kiln itself, without interfering with the burning of the lime, there can be no question as to the heat penetrating through the iron, nor of its power to warm the water. And all this will be additional, for it may be assumed that the boiler in the kiln will in no degree check the energy of the heat sent up vertically to heat that portion that will in any case be placed right over it. If it be found practicable to sink any or a large portion of this boiler into the kiln, then less vertical depth will be required for the effective working of this new and cheap method of heating. I found a general impression among those assembled at Hatfield, that the plan was only applicable to large establishments. Nor was this to be wondered at; the example before them was large and powerful; 7,000 ft. of pipe, actually heated, with reserve force capable, possibly, of heating 3,000 more; and a cart-way down to the mouth of the kiln, an arrangement made to facilitate the making or removal of lime on a large scale. The kiln itself had probably an excess of power. This was also the first experiment with chalk, and it was important in such a large undertaking that the kiln, at least, should not fail for lack of area; and, after all, I have seen stoke-holes as large and far more costly, doing a mere tithe of the work. But it would be illogical to reason that because of the magnitude of the works at Hatfield the system is not adapted for small places. Why should not the small place have its heat free as well as the large one? The expense of the kiln need not be much more than the expense of a well-built furnace, and all beyond the kiln costs neither less nor more, on Mr. Cowan's system than any other. Less coal was used at Hatfield than at Manchester. At the latter the rate was two of limestone to one of coal; at Hatfield it was seven of chalk to three of coal. The experiment may be pronounced a splendid success. The system seems equally well adapted for the heating of manufactories and public buildings, as for horticultural purposes, and is likely to be extensively adopted wherever sufficient depth is available, and limestone or chalk within easy distance. I do not anticipate much difficulty in commanding a market for the lime made. The next experiment needed is to test the cost of conveying limestone or chalk to the kiln, and this is about being worked out in Glasgow, where a kiln is being erected to be fed with limestone from Ireland.

THE FALL OF A CHIMNEY AT NORTHFLEET.

Sir,—The particulars obligingly furnished in your last number materially add to, and in some respects correct, those previously reported. If we cannot now fix upon the immediate cause of the disaster, we may draw from it some practical hints, and I think they should be these:—

1. The building of a chimney-shaft of great height, of circular plan, and battering profile, is a work so special in all its conditions that it cannot for a moment be compared with ordinary walling. We know that shafts much more slight than this one was have stood securely; we do not know how narrow may have been their escape in their early and unconsolidated state. No doubt the rule which would fix the upper stage of 14 in. work at about 25 ft. in height is rough and unscientific, but as it happens, curiously, that the first bulge seen in the shaft was at about 10 ft. below the cap,—the point to which the above rule would have led one to carry up the 18 in. work,—it seems advisable to follow it, at any rate, until science shall have provided a better.

2. The bond seems to have been as good as was possible under the conditions, although, as compared with that we can obtain in ordinary walling, it was very indifferent. On this account alone it would probably be better to build such shafts on an octagonal plan, which would admit of nearly perfect bonding, and in that case the base would be made a little broader than in the case of the circular form.

3. The excellence of the bricks, like that of the materials generally, seems to be borne out.

4. Many persons being of opinion that cement used as in this case is of advantage, which opinion I hold to be erroneous, we may put the matter to a simple test. At intervals of about 3 ft. in height, two courses of brickwork successively were built with the vertical joints, dry, and then grouted with neat Portland cement. It is not necessary to dispute with your various correspondents as to whether this cement work would expand or not; if it did, it would fracture the rest of the work; whether it did or did not the rest of the work would fracture it. For this cement work would constitute a sixth or a seventh of the whole shaft, and any appreciable expansion would have force enough to pull out the green brickwork to the extent of its own expansion. If it did not expand, but set, as we say, "like a rock," the best way to judge of it will be to consider how a piece of rock similar in hardness would behave under the like conditions. Let us suppose a flat ring of stone, about 12 ft. or 14 ft. in external diameter, and only 5¾ in. thick; the ring moreover being almost, but not quite, divided into two laminæ, by a horizontal bed of fresh mortar. Admit that this can be bedded perfectly upon a mass of green brickwork, and then carry up more brickwork at the rate of 6 ft. in height, per day. Your ring would break like glass wherever the least inequality of pressure took place (which would be inevitable), and what would happen to one such ring would happen to any number of others in detail, and just as the separate pieces of broken glass might be perfectly sound and very strong, so might be the stone or the brick in cement. This would be quite consistent with its inutility as a bond or tie, which inutility may be inferred from the result in the present case. It seems a wise caution never to use cement brickwork in intimate combination with mortar brickwork, and also to use, by preference, a mixture of perfectly clean sharp sand equal to, or in excess of, the cement. When we use good brick and mortar on a good foundation, we know pretty well what we may rely upon. If other bond is required the introduction, at intervals of a few feet, of three courses of iron hoop bond, while it can do no harm, will effectually resist any ordinary disturbance during settlement, and when the work is thoroughly set, it will need no assistance. The octagonal form of shaft would much facilitate the use of such bond.

5. Such a rate of progress as 6 ft. per working day, or 35 ft. per week, seems to require very favourable conditions, to be free from all chance of failure.

6. Why must every chimney have a ponderous cap, and thus add to other sources of danger this final one? Brickwork corbelled out to the extent of 15½ in. beyond the face of the wall, with an additional 4½ in. in the piers, would, to a great extent, be dependent upon the cementing material, and without it might fall away bodily. The introduction of mortar into the cement, in such a position, can never be entirely trusted, and certainly not unless actually made and used under perfect supervision.

The most difficult question in the whole case arises out of the fall of "great masses of brickwork" down the chimney *before* the general catastrophe; but it seems a question of scaffolding rather than of construction. There does not appear to have been a rigid framework of timber which would interfere with the settlement of the brickwork, nor anything beyond the needful scaffold constructed upon the last stage of cross-timbers, which were carried by the brickwork. Some fracture in the scaffolding or hoisting machinery may have acted upon the cross-timbers, and so tilted the parapet over. This, therefore, must be reckoned amongst the dangers which render the bonding and tying in of structures of this kind a matter of special importance.

B.

Two bricklayers (brothers of one of the deceased) tendered evidence which, if utilised, contained the real cause, and with their statements I cordially concur; from that of the architect, and also of the architect of forty years' practice, I dissent point-blank. The latter gentleman (evidently oblivious of the fact that the chimney was already down) said, if the cap swayed at all it must have swayed all round. Mr. Cubitt, however, puts in the *coup de grace*, by stating that if there was any tendency to swagging it would have taken place before then, when the work was fresh; as if the whole shaft was not fresh, even to its foundation.

I have seen something of shaft-building in Manchester and other Lancashire towns, and am not aware of a single chimney this height erected in less than twelve months; the usual mode of procedure being to erect it to half its height, and then allow it to stand for six months, thus becoming consolidated, when the rest of the work may be afterwards completed. Had this course been adopted in the instance before us, the shaft would at this moment have been upright.

For the information of your readers I will describe how the work in the cap would be carried out from the architect's plans. The projection is obtained, as stated above, by a series of courses overlapping each other ½ in. each. Well, sir, the first course would be fixed so as to leave a cavity of ½ in.; the second, 1 in.; the third, 1½ in., and so on, the interstices being filled in by bats or rubbish, depending for bond upon the cohesion of the mortar, which, in this instance, had not had time to set. From personal observations I can assure you that the vibrations of shafts, which have had more time than this in building, are of a character difficult, if not impossible, to conceive by persons unaccustomed to remaining at the top. I have on many occasions felt frightful oscillations, by wind, but more frequently by workmen discharging the loads from the derricks upon the scaffold, &c., some of which would describe an arc of 13 in. to 14 in. decreasing in intensity, but increasing in speed, until it regained its equilibrium by what the men describe as a trembling motion.

Jno. Parker.

ANTIQUITIES IN READING.

At the opening meeting of the Reading Architectural and Archæological Society, held on the 5th inst., the Rev. L. G. Maine, Vicar of St. Lawrence, said the need of a society to discuss archæological subjects in Reading had lately received remarkable illustration by the appearance of a letter in the *Builder*, in which assertion was made that the old building in St. Lawrence's Churchyard was the original Grammar School founded by Henry VII., in which Archbishop Laud was educated. In the object of that letter we must all sympathise. It was, in fact, an appeal to those educated at the school, not to suffer an old historical building to fall to decay without an effort to restore it. In fact, however, this is not the old school. I propose to discuss the site of the old school, and then to say a few words about the character of the old building, now existing on the north side of St. Lawrence's Churchyard. If we would seek for the original school of Henry VII., to which he gave 10*l.*, we must seek it in the basement of the present town-hall. And now if we may not identify the old building in St. Lawrence's Churchyard with the old schoolroom used in Henry VII.'s time, what may we think about it? Has it no history of its own? I think we are much indebted to the writer in the *Builder* for drawing our attention to such an interesting relic of olden times. I think we may identify it with the old barn or granary of the monastery. The present building has two stories plainly corresponding to the two floors to be found in many old barns. The granary has plainly undergone many alterations which may be accounted for. Considering its history, I would express my regret that the old granary is to be destroyed. It is a veritable relic of the old monastery. It is interesting, too, as having been the residence of Sir William Armorer, a man of rough aspect, who escaped after the battle of Worcester, and became equerry to King Charles II. He was probably the king's keeper of the stables. A mitred abbot like that of Reading when he went forth in state was accompanied by his retinue of a hundred horse. He rode with a hawk on his fist, on a mule with a gilt bridle, with saddle and cloth of blood colour. But an ordinary monk was enjoined by statute never to appear without the cowl and regular habit of the order. The vicar of St. Lawrence, who commends this paper to your notice, may lay some claim to discuss the subject of the stables, because in former days in these stables a horse was kept for the use of his predecessors whenever they were called upon to attend the invitation of the bishop.

At the conclusion of the paper, a discussion ensued, in which the president, Mr. Morris, Capt. Kennedy, Mr. Rolfe, and other gentlemen took part; and it was unanimously held that the destruction of such an interesting relic as the old Abbey Granary would be a great misfortune to the archæology of Reading; and that, so far as possible, it would be most desirable to retain an erection of such antiquarian value.

Supposed Discovery of a British Stronghold at Grassington.—A gentleman, who is well acquainted with the beautiful country around Grassington, near Skipton (where it is proposed to establish a hydropathic establishment), in the course of his explorations in the neighbourhood has recently discovered some ruins of a British fortress. The main building, he states, has possessed three compartments of a large size, and has been defended by an outer wall, which runs from it for a considerable distance, and then returns to its lower extremity. Within the circle of the wall there has been another building, and hundreds of tons of rubbish lie upon the ground. The remains are upon the highest hill in the picturesque wood, and cover about half an acre of its surface.

CONGREGATIONAL CHURCH BUILDING.

THE ARCHITECTURAL ASSOCIATION.

At the ordinary general meeting of the session, held last Friday evening, the 14th inst. (Mr. J. S. Quilter, vice-president, in the chair), the following gentlemen were elected members: Mr. E. E. Deane and Mr. A. G. Northover.

The chairman announced that Sir William Tite's prizes had been awarded to;—1. Mr. H. Cheston; 2. Mr. H. G. McLachlan; Messrs. Langford, Hemming, Wood, and Taylor being honourably mentioned.

Mr. E. C. Robins then read a paper on "Congregational Church Building," and in the course of it said that by the term "Congregational Church Building" he did not mean only to refer to a denominational system, but rather to the desirability of building churches for the special convenience of the congregations who should use them. It may not generally be considered that seeing and hearing were so important where ritual observances were paramount, or where pulpit ministrations were the predominating element in the services; but where large numbers congregated to hear an able preacher, it became of considerable importance that the pleasure of seeing and hearing distinctly should be assisted by the building within which they were for that purpose assembled. There would ever be those who

> "Love the high embowed roof,
> And antic pillar's massy proof,
> And storied windows richly dight,
> Casting a dim religious light."

If churches were to correspond with the wants of congregations, then it would not be wise to ignore this powerful sentimental craving, or to measure every want by geometrical progression.

The old basilican form of church, which impressed itself so deeply upon the Mediæval mind, and left us the rich inheritance of numberless parish churches and all our glorious cathedrals, had still a deep-rooted hold of the sympathies of a vast company of religionists whose feelings had a right to be considered, and for whose worship it was the fittest form of expression, the most eloquent shrine of their deepest sentiment. Emulating, then, the liberality of our National Church, he did not share in the general condemnation of the usual form of Gothic churches, which was so suitable to the requirements of a very large section of the church; and that it should become a conventional form was not only to be regretted, but overcome. But some of the leading men had, nevertheless, set good examples of sturdy independence. Mr. Spurgeon had his own ideal, and executed it; Samuel Martin had a higher, and better realised it; Newman Hall had the best conception and intention, but it yet remained to be seen how it would be developed. These and other men had, at all events, in our own day given examples, the great cost of which proved that large means were yet forthcoming at the bidding of earnest men, and expense of realisation need not deter rising architects from attempting noble designs, even in this so-called utilitarian age. What we had chiefly to avoid was wasting the money at our disposal in little prettiness, at the expense of the main outlines and general plan of the structure,—elaborate tracery, hooded buttresses, foliated pinnacles, and a forest of carving.

The ecclesiastical buildings, in the Classic style prevalent in the earlier part of this century, must not be altogether passed over in silence, although they were not in fashion now. There was a large number of parish churches in and around London, erected during the revival of Grecian architecture, which were eminently suited for Protestant congregational uses, and for which they were specially designed. Of wide span and without internal columns, except some small ones for the support of the gallery-fronts, which in these buildings were so far made an integral part of the design that it was a rare thing to find them absent, they indicated what was felt to be all-sufficient for the simple services of that day. But they were usually bold in the extreme, cold, and cavernous; they offered good opportunities for coloured decoration, but were not of that character that commended themselves to the lover of our national style of architecture. The grandest specimen was that of St. Pancras Church, which had been decorated with colour to overcome its internal dreariness. Pratt-street Church, Camden-town, was another which had also been treated with decorative colouring, as well as the church in Waterloo-road, opposite the railway-station; and St. Matthew's, Brixton. Hanover Chapel, Regent-street, was a widely different adaptation of Grecian art, and was an attempt to bend its forms to the wants of a large congregation on so restricted a site that a double tier of galleries was required, and this building was now undergoing restoration under his superintendence. In the execution of this work he had introduced (the first time, he thought, in London) the use of the steam-jet for cleaning down the stonework, which obviated the necessity of any tooling of the surface of the stone. The time had come, he thought, for upsetting the old English practice concerning the orientation of churches, in defence of which he had heard no sufficient reason given, which had long since exploded abroad, and in consequence of which this particular church had been spoilt.

Prior to Inwood's revival of the Grecian style, Roman was prevalent,—the style of all Wren's churches, and those of his contemporaries and immediate followers, great nobility of conception being observable in them all. He thought that it was quite time that the rules and regulations of the Incorporated Society for Building Churches were revised and corrected. It might have been, and indeed was, very useful in the earlier stages of the Gothic revival to insist on a careful adhesion to precedents; but surely some latitude might now be given, and some experience must have been acquired by the examiners of plans, sufficient at least to enable them to issue a less pedantic and restrictive set of rules.

In the discussion that followed, Mr. Sulman said that with regard to acoustic properties of church buildings, he thought it absolutely necessary that every one present should hear; but the subject was beset with many difficulties. He advocated the adoption of the parallelogram to meet this question, which would convey the voice to any part of the building. He would like to be better informed with regard to the use of the steam jet for cleaning down stonework; and, in conclusion, proposed a vote of thanks to Mr. Robins for his paper, which was carried.

Mr. Paine was of opinion that with regard to building a church where people were to worship, it should be done with as little money as possible; and with the planning of the building the architect should suit the requirements of those who employed him. He thought that the Mormon Tabernacle at Utah was a capital building for hearing and seeing, being a convenient shape. With regard to the development of church architecture in other countries, it was interesting to know in what position England stood. He was of opinion that we stood alone in this respect as compared to other countries. He would ask whether it was a good plan to adopt "Middle Aged" architecture? In almost all modern churches in France the aisles were never used for seats, and he thought that this was an advantage, the aisle being only a place to walk in. In Germany the churches that were built were carried out with a rigid symmetry, unknown in England; in this country churches being built with a great paucity and bareness about them.

Mr. Reddett advocated, with Mr. Robins, the adoption of cast-iron pillars for church buildings, which should be erected on the circular plan. No one could go into the Tabernacle of Mr. Spurgeon without being struck with its likeness to a theatre in point of shape.

Mr. Flint Clarkson said that it was very necessary in churches that the congregation should hear and see well. He believed that the reason why there was comparatively an anxiety not to go in for prodigious outlay in church buildings mainly proceeded from the idea that the problem was an unsolved one. One could feel that naturally the thing was more of an experiment, and that any one who boldly tried such experiment should learn by their failures. It was a new kind of problem to join monumental architecture with a congregational church. With regard to the adoption of the elliptic or modification of the circle plan, the question arose as to whether such a method would give the building sufficient dignity. But the gallery was really the great difficulty, and he believed that the plan of suspending galleries from a very powerful roof had been successful, but still this was involved in some difficulty.

Mr. Ridge regarded a church as purely a place of worship, and for this purpose it was undoubtedly desirable that a church should be so arranged that the persons therein should hear well. He took exception to the adoption of long transepts, and advocated the adoption of the horseshoe system of building churches. He trusted that the liberality allowed in future church buildings would give a larger space upon which they were to be built.

Mr. Hugh Stannus thought that the idea of a church was more for teaching than worship, and therefore it was necessary that people should both see and hear well. For this purpose a building should be comparatively small, and the roof must be kept down as much as possible. A theatre-shaped building was, after all, really the best. He would ask whether it would not be advisable to build churches in the form of the Greek amphitheatre.

Mr. Robertson was of opinion that the function of the architect was not to prescribe in what manner congregations should worship, but to satisfy the requirements of those who employed him.

The chairman said that the great object which appeared to him to cause the church of the present day to differ from other churches was the entire absence of symbolism; and this essential element of the early church was gradually losing its force in this utilitarian age. In this respect we were to a certain extent following the Americans. With regard to the pulpit, why should it not be abolished altogether? Many attempts had been made to do this, but without success.

Mr. Robins, in reply, said that the discussion had been of a very interesting character. He had great respect for the form of worship, as represented by the High Church party, there being an immense amount of beauty and poetry in it. With regard to foreign churches, they were almost invariably large ones, and were vaulted, and were not designed or intended to be used only for teaching purposes. The theatre plan, or the adoption of the Greek amphitheatre with regard to the building of congregational buildings, was a subject beset with many disadvantages, one of the difficulties being to make it church-like.

ST. MICHAEL'S HALL AND SCHOOLS, HACKNEY.

A new building, combining the double purpose of schools by day and a public hall at night, has been opened in Lamb-lane, South Hackney. The establishment has been promoted by the Rev. J. B. Podmore, rector of St. Michael's, and is intended to be conducted on voluntary principles. Means for erecting the hall have been provided by private subscription among residents in the district, aided by other contributions. This is one of the largest institutions of the kind that has been opened since the passing of the new Act, and is regarded as being, to some extent, in opposition to the Board school, which is situated on the opposite side of the lane. St. Michael's Hall is built on a site adjacent to the church of that name in London-fields, the ground having been purchased from the Great Eastern Railway Company, whose new branch line to Enfield runs close by. The interior is spacious and lofty. The area is capable of containing an assemblage of 1,000 persons; but for the purposes of the schools it has been deemed advisable to divide the room by means of huge folding-doors, surmounted by independent partitions reaching to the roof, and effecting a complete separation of what are intended to be the girls' and boys' departments. One room is intended to accommodate 250 girls, the other 500 boys. Mechanical arrangements have been introduced for the purpose of changing the schools into the hall. The cost of the building, including 900*l.* for the site, is 3,500*l.* Of this sum 2,238*l.* have been received, and a grant of 530*l.* from the Privy Council will be made when the remainder of the money has been raised.

A TELEGRAPHIC CABLE AT THE TAY BRIDGE WORKS.

The works at the great bridge now in course of construction over the Tay are being vigorously pushed forward, and, with the view of still further accelerating the progress of the undertaking, a telegraphic cable was laid last week between the contractor's offices at the north and south ends of the bridge. The cable was paid out from the steamer *Excelsior*. The whole operation was accomplished in about forty minutes, and immediately afterwards the instruments were connected and signals exchanged. Another connexion is at once to be made with the station on board the store-ship in the middle of the river, and it is expected that this means

of communication will give great facilities in the work, as much time is often lost for want of means to command a tug at the right moment, and transmitting other orders. The contractors have also made arrangements to increase the plant considerably, especially the part which is used to pump the sand out of the piers, as this has proved to be a point which could not go on with sufficient speed, compared with the other operations. It is fully expected that the works will be completed in less than two years.

THE WORKS ON THE SEVERN BRIDGE RAILWAY, AND THE SEVERN TUNNEL PROJECT.

The works in connexion with the Severn Bridge Railway, powers for which were obtained during last session of Parliament, are about to be commenced, it having been decided within the last two or three weeks to proceed at once, but some time is expected to be taken up in the purchase of land over which the railway on the forest side of the Severn will pass. The line commences in a township named Sydney, near the parish church there, and the river will be spanned at the point known as the Wheel Rock. The Glasgow and Berkeley Canal Company have decided to contribute 50,000*l.* of the capital necessary for the construction of the bridge and railway, the company being under the impression that the new line will increase their revenue by producing an export trade at the new docks, and affording access to new markets.

The borings for the Severn Tunnel are also in progress, and the process is watched with great interest by geologists and persons in search of coal.

THE ALBERT HALL.

The Royal Albert Hall Choral Society sang Bach's sublime Passion music (*St. Matthew*) on Thursday, 14th inst., being the second concert of the season. The choir, under Mr. Barnby's direction, gave the choruses in such a manner as to maintain fully the reputation it so deservedly gained last season. The points were all taken up with most praiseworthy precision, and the only fault we could find, were we inclined to be hypercritical, would be a slight tendency on the part of the soprani to flatten on the sustained note at the end of one or two of the chorales, which otherwise were beautifully sung, the *pianissimo* passages being especially good.

Foremost among the soloists was Madame Patey, whose rendering of the contralto music was simply perfect, more particularly in the air, with violin obbligato, "Have mercy upon me." Mr. Cummings is now so familiar with the tenor music (the part of the Evangelist), that his rendering of it leaves nothing to be desired. Mr. Thurley Beale, who has recently made rapid strides in his profession, sang the principal bass part like a thorough artist; while Miss Emily Spiller (soprano), who possesses a sweet voice, would be heard to greater advantage in a smaller hall.

Handel's "Israel in Egypt" is to be given at the next concert, with Miss Edith Wynne, Madame Patey, and Mr. Sims Reeves.

STREET IMPROVEMENTS AND TRAMWAYS IN SWANSEA.

The Corporation of Swansea have just entered into an arrangement with a public company for carrying out important street improvements in that town, under circumstances of an entirely novel character. A company of London capitalists, calling themselves "The Swansea Tramways and Improvement Company (Limited)," have made a proposal to the corporation of Swansea to construct a number of tramways in Swansea, and also to undertake the making of several new streets in the town, and the widening and improvement of others. The proposal includes the purchase in fee, by the company, of all the sites necessary for the undertaking, and also the payment of compensation to parties injuriously affected. The estimated cost of the works,—including the tramways, 36,000*l.*,—is 136,000*l.*, towards which the company propose that the corporation should contribute 25,000*l.*, the company undertaking to keep the streets and roads permanently in repair, to the extent of 8 ft., which it is calculated will effect a saving to the corporation to the extent of from 750*l.* to 1,000*l.* per annum. The improvements also include the construction of a new bridge at the outskirts of the town, leading to one of the main thoroughfares, which will materially reduce the present gradient of the road, viz., from 1 in 19 to 1 in 35. As a guarantee that the company will carry out the works, they are prepared to deposit 5 per cent. upon the estimated cost of 100,000*l.* for the improvements.

The proposal was discussed at a special meeting of the town council, which has just been held on the subject, when the feeling in its favour was warm and unanimous. It was stated by the Mayor that during the whole annals of the corporation, a more important matter had not been brought before it. He added that the proposed improvements would be the making of Swansea, and that the suggested street alterations would be most advantageous to the town. The figures to be submitted to the council would show that the alterations, which had become necessary through the great traffic in the streets, would be executed without the corporation ultimately incurring any expense.

The resolution was unanimously adopted, the Mayor remarking that it had been arranged that only when the improvements were carried out was the corporation to pay the sum agreed to. The surveyor had divided the 25,000*l.* between the different alterations, and only as they were carried out would the instalments be paid. The works contemplated are to be completed within three years from the time of the passing of the Bill.

THE NEW YORK BUILDING TRADE.

The building trade of New York has of late been very dull; in fact, the present season is exceptional in this respect. According to the statements of the largest builders in New York, this state of inactivity has been brought about by a variety of causes, not the least of which were the threatened strikes last spring, and the actual eight-hour contests previously. The vastly increased value of real estate, the great expense of labour, and the scarcity of money have rendered men unwilling to speculate in what has always been regarded as one of the safest possible investments of capital. The uncertainty that the men would stick to their work after it was commenced, and not strike for higher wages or fewer hours' work, was a great objection to the builder to continuing upon the construction of houses, the site and materials for which cost such high prices. The occurrence of the late financial panic was only required to bring about the utter stagnation of this branch of trade. In the suburbs, however, where the influences so potent amongst the operatives of New York are not felt, and where living as well as real estate is cheaper, capitalists have been spending their money more liberally, and associations for building up and improving localities have been actively employed, though to nothing like the extent of 1872. With regard to the general situation of the building trade of New York, one of the prominent builders of that city states,—"The fact of the matter is, the building trade is wholly dependent upon the general trade of the country. When the latter is bad building will be bad, and *vice versâ*. The present stringency of money affects us as much, if not more, than others, and coming at this time of the year, when men rarely enter upon new building speculations, because of the winter being so near, the prospects of builders and their *employés* during the remainder of 1873 are very dark indeed."

THE AMERICAN CENTENARY BUILDING COMPETITION.

Sir,—Being a subscriber to your journal, and now on a tour through America, I have thought that it may be interesting to your readers to have an example of the way in which competitions seem to be managed in this country; and if the instance I shall mention be the rule, I think we may cease complaining of our system.

America intends, or *intended*, having a grand Centenary of its Independence in 1876, in the shape of an International Exhibition. Two winters ago a commission was appointed from all the States to make preparations, when great pains were taken to assure Americans that they would all be interested in the event, and help would be expected to come from all parts of the country.

This commission, by the beginning of the present year, had so far advanced in its work as to have decided on Philadelphia as the place most suited for its object and America's glory. On this decision, it would seem, the commission and committees were reorganised, and out of seven as the number of the committee for the selection of designs, four were Philadelphians, or at least Pennsylvanians. Prizes of 1,000 dollars each were offered for the best ten designs for the necessary buildings, and all architects were invited to compete for them. Forty-four accepted the invitation, and spent some weeks of hard labour in preparing their drawings. In course of time the best ten were selected, and requested to revise their plans for a second competition, from which the best four were to be selected, and to receive respectively 4,000, 3,000, 2,000, and 1,000 dollars each. The decision on this last competition has just been made known, with this result:—

It seems that out of the forty-four sets sent in on the first competition, six were from Philadelphia architects. These six were among the first ten selected, and now four of them are selected to receive the second premiums offered, and all outsiders have worked to no purpose. It would also appear that it is not the intention of this committee to follow any of the plans to which these premiums have been awarded, as the expense of carrying them into execution would be too great, and would also require a much longer period of time to get completed than they have at their disposal.

I do not remember of any case in which such conspicuous partiality was shown. Instead of its being a national affair, it would seem it is to be solely for Philadelphia, unless capital be required, when they will look to outsiders to supply them.

H. G. B.

Washington.

*** The account certainly reads oddly, but we have yet to learn whether or not the designs from Philadelphia deserved the position given to them.

PARLIAMENTARY NOTICES AS TO RAILWAY AND OTHER WORKS.

Among the notices already given by advertisement of intention to apply to Parliament in the coming Session for Bills, &c., are the following:

Westminster Boulevard.—Construction of new street from the New Palace-yard, near the Clock Tower of the Houses of Parliament, to Eaton-square, near St. Peter's Church, and streets therefrom to or near to Victoria street, widening of other streets, junctions with and stopping up and appropriation of various streets and thoroughfares, works in connexion therewith, construction of market-place, market powers, compulsory purchase and appropriation of lands, &c., model lodging-houses, provisions in relation to parochial and local rates, incorporation of company, powers of construction, &c., to such company or company incorporated under Companies Acts 1862 and 1867.

Midland, Highgate, and Alexandra Park Railway.—Construction of a railway from the Tottenham and Hampstead Junction Railway to the Edgware and Highgate Branch of the Great Northern Railway Company. Incorporation of Company. Powers to the Company and the Midland and London and North-Western, Great Northern, Great Eastern, Tottenham and Hampstead Junction, and Hampstead Junction Railway Companies, and the Alexandra Palace Company (Limited), or some or one of them, to carry the said Act into effect. Running powers over the Midland and London and North-Western, Great Northern, Great Eastern, Tottenham and Hampstead Junction, and Hampstead Junction Railways, and the Alexandra Park Branch of the Great Northern Railway, and the Railway and Station of the Alexandra Palace Company (Limited). . . . . Conversion of Highgate Archway-road into a public highway, &c.

Alexandra Park Railway.—Extension of time for Purchase of Lands and Completion of Works. Provisions as to Abandonment of Undertaking and Dissolution of Company.—Amendment or Repeal of Act.

Aldgate and Cannon-street Railway.—(Completion of inner circle).—Construction of a railway from the Metropolitan Railway at Aldgate to the Metropolitan District Railway at Cannon-street; abandonment of part of Tower-hill Extension Railway; new streets and widenings and adaptation of existing streets; powers to company to be incorporated, and to Metropolitan and Metropolitan District Railway Companies,

the Corporation of London, and the Metropolitan Board of Works, or any of them, to execute the works, &c.

Wandsworth, Fulham, and Metropolitan Railway.—Incorporation of company; construction of railways from Wandsworth Bridge to the authorised Metropolitan and South-Western Junction Railway at Fulham; traffic and working arrangements with Metropolitan District and Metropolitan and South-Western Junction Railway Companies; compulsory purchase of lands; stopping up streets; tolls, &c.; amendment of Acts, &c.

Notices relating to new northern railways have also appeared. The Midland and North-Eastern railways apply for a new line from Swindon to Knottingley, making the Midland as short as the Great Northern, for traffic arrangements, and other powers. A company is to be incorporated for uniting the Midland and North-Eastern railways from Skipton to the Otley and Ilkley line, with powers to both companies: and there is notice of a Leeds suburban railway to Roundhay Park, with running powers to Midland and North-Eastern. The North-Eastern also applies to construct a railway from Hull to Kirk Ella, new lines at York, a railway from Pickering to Seamer, at Middlesbrough and Hartlepool, near Durham, at South Shields and Tweedmouth, with various other alterations. The Kirk Ella line is designed to relieve the frequent block on the Hull and Selby, and the Pickering and Seamer line fills up the vacant gap to Scarborough.

THE CITY FRUIT AND VEGETABLE MARKET.

SIR,—The Corporation is advertising most perseveringly to get as many designs from architects as it can for the above; but why should we exert ourselves, since we believe that the City Architect will be employed to carry out the idea, or a selection of suggestions from the premiated designs, as was the case with the Dead-meat Market, the pioneers being forgotten, and the man who carries out the work being the only architect remembered?

WILLIAM GILBERT.

"A LABOUR QUESTION."

SIR,—"A. B." asks a question under the above heading, in your issue of November 8th.

My quarrymen "struck" for an advance of wages in February last, which was partially conceded. They again demanded a further advance in June, which was conceded; and in July their working-hours were reduced to 49½ per week. I am not aware that there has been a simultaneous "strike," but many of the quarry-masters in this district could tell their woes, if it is too much trouble to write them. One of my quarries was nearly drained of men during the summer by the re-opening of an old quarry, and the offering of large wages, which said old quarry is now closed. I fancy quarry-plant will be cheap by and by.

STEPHEN SEAL.

Darfield Quarries, near Barnsley.

SANITARY STATE OF THE NORTH OF ENGLAND.

DR. GWYNNE HARRIES, a medical inspector of the Local Government Board, was sent down from London some time since to take measures to alleviate the shocking state of the whole county of Durham, and on Wednesday week he left South Shields for the London Fever Hospital, having contracted scarlet fever in the performance of his duties. The disease followed an unusually rapid course, and he died on the next Saturday.

When the following reports made to the parochial authorities are taken into consideration, the only surprise is that the whole of the inhabitants of the county are not candidates for the Fever Hospital:—

Six Beds in One Room.—At the ordinary meeting of the Leadgate Local Board, Mr. Hawdon, the inspector, reported several cases of overcrowding. One house of two rooms was occupied by the tenant, four children, a female servant, and no fewer than eighteen lodgers. The room upstairs contained six "shakedowns," there not being room for a particle of furniture in the apartment.

At the Spennymoor Local Board of Health, one of the members inquired of the surveyor if any steps had been taken about some cellars.

The Surveyor.—Notices have been served, but nothing further has been done.

The Member.—I say that it is abominable that no further steps have been taken to put down this overcrowding.

The Chairman.—There are scores of homes almost as bad as these cellars.

A Member.—The state of this place is something horrible. In one of the cellars there are seventeen people living and sleeping. I went to the place, and the smell was something fearful. I should like to know what is going to be done in the matter.

The Surveyor (coolly).—I can take the occupants before the magistrates if I get orders.

The Chairman.—But you do not require orders. You are the inspector of the place, and can take them before the magistrates without our orders.

The Clerk.—You had better give the surveyor authority to take legal proceedings.

A Member.—Let that be done at once. There are only three beds to seventeen people in one cellar. They are worse than a lot of pigs and savages. If we do not mind we shall have officers from London here to do our work.

Fever is raging round about for miles.

REPAIRS OF FOOTWAY.

HAMILTON V. VESTRY OF ST. GEORGE'S, HANOVER-SQUARE.

THIS case (in Court of Queen's Bench) raised a somewhat curious point as to the appellant's liability to repair the footway in front of his house.

The appellant is owner of a house on the north side of Eaton-square. The cellars in front of the houses on that side of the square are formed of brick walls, covered on the top by the pavement-stones without any brick arches supporting the pavement, the upper surface of which forms the footway, while the under surface forms the roof of the cellar. At the time when the houses were built it was necessary to obtain the sanction of the then local governing body before the stones were put down. The builder of the houses, with such sanction, put down the flagstones 5 in. thick, and without any substructure; but the constant traffic of foot-passengers has worn down the flagstones to only 2½ in. thick, and they cracked so as to become dangerous. The vestry put down new flagstones in front of the appellant's house, and demanded the cost of so doing from the appellant. This he declined to pay, contending that, as the public had worn away, the public were bound to repair it. The magistrate to whom the question was submitted, by a sort of Solomon's judgment, ordered that the appellant and the respondents should each pay one-half, it being the statutory duty of the owner to keep his cellar in repair, and of the public to keep the way in repair; and against this decision the present appeal was brought.

Mr. Justice Quain said the magistrate's order must be set aside; that as the injury had been done exclusively by the public walking over the cellar it was just that they should pay the expense of repairing it, and that equitably as well as at law Mr. Hamilton was not liable.

Mr. Justice Archibald concurred.

EDINBURGH.

THE foundation-stone of a new United Presbyterian Church, at Palmerston-place, was laid on the 4th inst. The building is to be erected at a cost of 13,000*l.*, from the designs of Messrs. Peddie & Kinnear, architects. The style is Italian in character. The elevation towards the street shows a pediment flanked by towers 18 ft. square, and 100 ft. high, surmounted by domes and lanterns. An arcaded porch, supported by six pillars having foliated caps, is reached by a flight of eight steps; the porch or portico is 14 ft. high, and the front wall is continued over it to the height of 23 ft., and is terminated by a cross at the apex of the pediment. This elevation is pierced by five double-light windows, arched, and divided by pillars. Within the porch are three doors leading to a vestibule, 40 ft. by 12 ft., and on either hand are stairs leading to a gallery, and in the towers are retiring-rooms. The interior is square at the pulpit end, but is semicircular towards the front, and a corridor, 6 ft. wide, runs round both area and gallery; above the portico there is a hall, and in the upper portion of the towers are a vestry and waiting-room. The whole of the windows are semicircular-headed, and the furnishing is unpretending and suitable.

The movement towards introducing instrumental music into the Kirk is gaining ground. A new organ was opened in Newington Parish Church on Sunday last. The instrument was built by Messrs. Forster & Andrews, of Hull, and is said to be a very fine one. Preparations are also in progress for the introduction of an organ into the College-street United Presbyterian Church.

The Church of the Sacred Heart in Lauriston-street, a building in the "Jesuit style," lighted from the roof by glass domes, has been decorated in a grandiose manner by a German artist.

Operations are to be commenced immediately for the widening of the North Bridge. The contract amounts to the sum of 12,670*l.*

It is proposed to erect new medical schools in connexion with the University at Park-place, adjoining the new infirmary. Every department of the medical faculty is to be provided for, and the buildings are to contain theatres, laboratories, and class-rooms adapted to the scientific and teaching requirements of the separate departments, along with a suitable hall for academical meetings, and examination or graduation ceremonies. The late Sir David Baxter left a sum of 20,000*l.* towards this object, and the total subscriptions amount to 36,000*l.*,—about half the sum requisite to carry out the scheme in its entirety. It is thought that a grant in aid may reasonably be expected from Government.

The governors of Heriot's Hospital have resolved to erect two new schools at Abbey Hill, at a cost of 2,000*l.* and 1,000*l.* respectively.

An exhibition of water-colour drawings is now open at Hill's Galleries, St. Andrew's-square. It contains examples of well-known artists, both English and Scottish, but none of them are worthy of special notice.

SHAMS.

SIR,—If there was any personal discourtesy to your correspondent in my letter I am truly sorry for it. I am not aware of any, nor was any intended. For the improvement of the dwellings, about which he wants my opinion, I can only suggest a little limewash and more "accommodations" in preference to decorations, whether shams or otherwise. When he has made the tenants and their houses clean, and taught them to keep them so, "chromolithographs that rival paintings" may be added *as their purses permit*; but it would do them more good to get a stout pair of boots, and take an occasional walk in one of the many parks. They may by that means learn to love Nature, and not trouble themselves about "Mayfair."

But your correspondent has caused me to wander from the point at issue, viz., the influence of shams on mankind. What is a sham? A deception, an imposture,—in other words, a substantive lie. We all hate a verbal or an acted lie. Where has the substantive lie or sham the advantage?—that it should be encouraged and set up as "the humanising influence of the nineteenth century."

Has a thought been bestowed by this defender of shams on the producers of these same lies? See how they toil all day in close atmosphere at the most monotonous work for the lowest possible wages (or how else can the shams be cheap?). What satisfaction can they have in their work, the object of which at best is to emulate "Mayfair" and foster that pride which is as surely the forerunner of degradation as that humility which your correspondent depreciates is the only road to social advancement and true happiness. I do not think it will be necessary to trouble you with further letters on this subject, as I have confidence that Truth will prevail when Falsehood is once unmasked.

In conclusion, I would earnestly exhort your readers, if they will forgive my presumption in doing so, to strive after Truth in all things, and to avoid anything that savours of deception.

T. F. P.

INSTITUTION OF SURVEYORS.

A CONVERSAZIONE to celebrate the opening of the new rooms of this society, was held at No. 12, Great George-street, Westminster, on Wednesday, November the 12th. At the invitation of the president and council, a large number of members and associates assembled in the commodious suite of rooms which have just been completed at a large outlay. The society had so far outgrown the premises which it previously occupied, that further accommodation for its present needs had become absolutely necessary, as well as provision for its future expansion. In addition to this, it was considered by the council to be necessary to erect a room suitable not only for the fortnightly meetings of the society, but which should also be especially fitted for the numerous arbitrations held at the Institution by its members, and for which the old rooms were found to be to some extent ill adapted. As many of those members of the Institution who reside in the country have no Town offices, special rooms have been provided in the new building, in which they can meet their professional friends, hold consultations, write letters, and so on.

On the occasion in question, the rooms of the society were well decorated. The libraries were filled with Mr. J. A. Rose's magnificent collection of historical portraits lent by that gentleman for the occasion, as well as with many valuable and beautiful water-colour drawings by Mr. R. H. Mason. The walls of the council-room were covered with oil-paintings lent by members and friends. In the large lecture-hall (a handsome and lofty room) was exhibited a portion of the remarkable collection of prints illustrative of the topography of ancient London and Westminster, lent, with his usual liberality, by Mr. J. E. Gardner. Other contributors of objects of

value and interest were the Watcombe Terra Cotta Company, who sent a collection of pottery executed in that material; Mr. J. E. Price, who exhibited some Roman pottery, and his well-known collection of Pilgrim signs; and Mr. Lambert, of Coventry-street, who decorated the refreshment-tables and some of the recesses with rare examples of the ancient Goldsmith's art. Mr. J. P. Heseltine, Mr. H. Vignolles, and others, were also contributors. A special feature of the occasion was the excellent musical performance under the conductorship of Mr. J. B. Zerbini. The *conversazione* was perfectly successful, and gave happy augury of the future prosperity of the society.

IMPROVEMENTS IN PARLIAMENT STREET.

THE PUBLIC OFFICES.

Several of the houses on the west side of Parliament-street, near the Whitehall or north end of the street, have been sold, and are in course of removal, and the improvement which has been so long projected in the widening of Parliament-street to the same width as Whitehall is at last in a fair way towards actual achievement. The doomed buildings comprise rather more than half the block which at present obstructs the view of the new Government Offices in Downing-street, and their removal will bring into the light of day the west end of the pile. It will also make more obvious certain departures from "the square," which will doubtless excite comment. We hope the other portion of the block will speedily follow, and in a few years we may look for the completion of the work in the demolition of the houses between Upper Charles-street and Great George-street. The approach to the Houses of Parliament from Charing-cross would then be one of the widest avenues in Europe,—too wide, indeed, for the convenience of pedestrians.

Mr. F. Sang has re-arranged his designs, suggestive of improvements in Westminster, and the concentration of Government Offices, of which we gave an account in a previous volume. His drawings are at this moment with the Metropolitan Board of Works.

The proposal is to enlarge Trafalgar-square on the north, in a rectangular shape, and on the south in a semicircle or crescent, and to an avenue in a straight line from the centre of the Nelson Pillar to the centre of the Clock Tower of the Parliament Houses. Beyond the crescent of the square an opening of 150 ft. leads into a second square, surrounded by public offices of large dimensions, an arcaded thoroughfare of seven spacious arches on each side, one leading to the new Thames Embankment, the other into St. James's Park. A large circus at the Westminster Bridge end completes this Grand Avenue. He further proposes to prolong the Mall in St. James's Park, and form a commodious drive and thoroughfare into the southern part of the enlarged square leading to the new Thames Embankment.

SCHOOL BOARD SCHOOLS.

London.—On the recommendation of the works committee, it was resolved "That the tender of Mr. George Wall, of 2A, Dale-road, Kentish-town, N.W., amounting to 9,269*l.*, for the erection of a school to accommodate 1,070 children on the Haverstock-hill, Marylebone, site, be accepted. That the tender of Messrs. T. Niblett & Son, of 37, Birkbeck-road, Hornsey-rise, N., amounting to 7,180*l.*, for the erection of a school to accommodate 755 children, on the site in Hawley-crescent, Camden-town, be accepted."

Scarborough.—The opening of the principal board-school at Scarborough was celebrated by an appropriate demonstration on the 25th ult. The schools are meant to serve the central portion of the town, and form the chief work which the first school board elected by the borough have executed. The central schools are situated in Trafalgar-street West. The building has two frontages,—the infants' department facing Trafalgar-street, the girls' and boys' department facing the new road now in course of construction by town council, the board-room and caretaker's residence being placed at the extreme corner. The architecture of the schools partakes of the Gothic, and the building is of red brick, with stone dressing. The rooms are capable of accommodating 800 children,—viz., 400 infants, 200 boys, and 200 girls. The infants' department consists of one large room, 65 ft. by 31 ft., for the assemblage of all the infants at one time; one class-room, 32 ft. by 18 ft.; two class-rooms, 20 ft. by 18 ft. each; teachers' room, cloak-room, lavatories, &c. The girls' department consists of one large room, 80 ft. by 20 ft., for the assemblage of all the girls at one time; two class-rooms, 20 ft. by 14 ft.; teachers' room, cloak-room, lavatories, &c. There is a large playground about 1,300 square yards, common to the girls and infants, with shelter-sheds for the accommodation of the children in wet weather. The boys' department is similar to that of the girls, having one large room, two class-rooms, &c., with large playground, effectually cut off from the girls and infants' department. The Board department consists of the Board-room, 20 ft. by 18 ft.; clerk's office, 16 ft. by 12 ft.; and lavatory; attached to this is a living-room, and over the whole are three bedrooms. The architects were Messrs. Stewart & Bury.

Drighlington.—After a long discussion the local Board has resolved:—"That the principle of 'wide schools' had been adopted in the plans after due consideration of the relative advantages of wide and narrow schools, and also has been, in some measure, determined upon on the nature of the site. At the same time the Board would adopt the suggestion of the Department so far as to make the width of the schools 32 ft. within, and that the architets be requested personally to attend before the Department and urge upon them the advisability of their approval being given to the plans already prepared and submitted to the Department, subject to the above-named modifications."

Hull.—The competition for plans of proposed schools and teacher's residence at Keyingham has been decided in favour of those submitted by Mr. Robert Clamp, of Hull.

"HOMES IN HOMERTON" AND THE HACKNEY BOARD OF WORKS.

Since our last issue, at a meeting of the Hackney Board of Works, a member called the attention of Dr. Tripe, the medical officer of health, to the article in the *Builder*, and asked him what he had to say in the matter. Dr. Tripe is reported to have said that "he had seen the article in question, which was very much exaggerated, although some of the statements as to nuisances, and the state of certain buildings in Homerton, were substantially correct. Immediately on reading this article, he instructed inspectors to visit the district at once, and he was happy to state that many of those nuisances had been removed, whilst the other matters complained of were receiving constant and proper attention."

It would have been more candid, we think, if the medical officer had boldly acknowledged that not some, but *all* our statements were substantially correct. Instead of exaggerating we understated the extent of the evils we found in Homerton and an adjoining district, which will probably come in for a separate notice. We have again visited Homerton; and although we found, in regard to one or two spots, a something had been done by the owners since our former visit, the radical evils yet remain. The back premises of a few houses in Brooke-street and Victoria-street have been cleansed, and the places of accommodation have undergone some patching in their fittings; but houses in Homerton, in number and variety, are bad, and removal in several instances, we fear, will be the only certain remedy. As to the inspectors, do they possess such practical knowledge in respect to the construction and drainage of dwellings as to properly qualify them for the task they are expected to perform? Moreover, unfortunately, the hands of inspectors are tied in the majority of instances, and they shirk their duty, because the performance of it might entail upon them the disagreeable necessity of reporting on the acts of some who are to be found sitting as their masters. Homerton, we repeat, is quite as bad as we have described it, and there is no lack of independent corroborative evidence, not only to bear us out in our statements, but to supplement them, if necessary.

Dingwall.—The hospital recently built at Dingwall, in memory of the late Dr. William Ross, has been formally opened.

CHURCH-BUILDING NEWS.

New Chesterton (Cambs).—St. Luke's Church is in progress, as recently noticed. Early in June a contract was made with Mr. Thoday, of Cambridge, to build the chancel, three bays of the nave and south aisle, and the south transept, for 2,888*l.* The designs were furnished by Mr. Smith, of London. In August, three bays of the north aisle were added at a cost of 340*l.* To complete this portion eastwards, there remain the north transept, which will cost 300*l.*; and the vestry and warming-chamber, about 80*l.* A gentleman has offered 30*l.* towards the north transept, if nine others will give the same: six have already promised. The committee wish to increase the number of sittings to 500, and save the expense and ugliness of temporary walls. The church, when completed, will consist of a spacious nave (30 ft. wide) of five bays in length, north and south aisles, a chancel with apsidal east end, and north and south transepts. At the west corner of the south aisle a tower and spire will be placed, rising to a height of 150 ft., and a vestry will be provided on the north side of the chancel. The style adopted is Early Fourteenth Century. The materials used are Cambridge bricks, with Bath stone for the dressings, and the open timber roofs will be covered with Staffordshire tiles. The total accommodation provided when the church is completed will be for 700. The pressing need of a church in this district has compelled the committee to commence building, though they are not in a position to undertake the whole of the work.

Thruscross.—In the valley of the Washburn, a little distance from the Fewston Reservoir of the Leeds Waterworks Scheme, the Bishop of Ripon has consecrated the Church of Holy Trinity at Thruscross, or West End, a rural district in the parish of Fewston, sufficiently numerous and sufficiently distant from any other church to render their spiritual wants an object of solicitude; and it is indeed gratifying to know that the Rev. J. E. Brigg, formerly of Leeds, actuated by true missionary spirit, has taken the work in hand, and has not only been instrumental in finding funds for the erection of the church, but has undertaken its ministry, and the ministry of the district, without fee or reward, without a stipend. The church can hardly be termed new, seeing it occupies the site of one and includes a portion of the walls of a chapel which existed in 1660; and on the porch of the new church is a slab bearing the following inscription:—"Church of Holy Trinity, Thruscross. A chapel existed here A.D. 1660. Enlarged 1841. Nave rebuilt with chancel, and consecrated A.D. 1873." The church is a plain Gothic building, with porch, nave, chancel, and vestry. The seats are all open, of pitch-pine varnished. The chancel has a circular end, with four lights. The centre window is presented by Mr. J. D. Hannam, of Knaresborough, and others by the Rev. G. Hales, E. M. and A. Kirtley, and other friends, and Mrs. M. S. Dury, Birstwith. The floor of the communion and chancel is laid with encaustic tiles, and the building is warmed by heated air. The architect is Mr. H. Cockhain, of Middleton, Manchester. Assistance has been rendered by the neighbouring farmers in leading stone, &c., free of charge. Attached to the church is a burial-ground, given by Mr. W. Roundell, of Gledstone.

Upton Snodsbury.—The ceremony of re-opening the church here has taken place. It had become so unfit for use that it was found to require large and expensive repair and restoration. At last, owing to the decay of the timbers of the roof, it became unsafe to use it any longer for public worship, and the rector determined to commence its restoration, with the inadequate sum he had in hand, trusting to the liberality of churchmen to complete the restoration as funds would permit. A great portion of the walls have been rebuilt; new roofs have been erected to the nave, chancel, and aisle; new encaustic tile floors have been laid; and the whole church re-seated. The mischief done from time to time by churchwardens has been repaired; the gallery removed, the lofty tower arch thrown open, and the western window of the tower exposed to view. All the old features of the church have been retained, except a rood-screen, the remains of which are placed under the tower, only waiting for the necessary funds, to be restored. The chancel contains windows of unusual character. Mr. Wm. Jeffrey Hopkins was the architect, and Mr. George Warner, of Malvern, the builder. The portions of the work that remain unfinished for lack of funds are the restoration of the ancient

rood-screen, the proposed new porch, the restoration of the tower, and other details.

Tunbridge Wells.—A new cemetery has been consecrated by the Bishop of Chichester, for the Church of England portion of the community. The cemetery is situated on a slope commanding woodland scenery, and consists of about twenty acres, the land having been purchased by the town, of the Earl of Abergavenny. There are two entrance-lodges, and of course the usual cemetery buildings for the members of the Church of England and the Nonconformists. These were erected from designs by Mr. Stephens, of Maidstone, by Mr. Constable, of Penshurst.

Thirsk.—The church of St. Mary Magdalen has for many years gradually become more dilapidated. The tower, together with the tracery of the whole of the windows, is shortly to undergo restoration. A Restoration Committee has been appointed. Mr. Street is the architect, and he estimates the probable cost of the restoration at 4,600*l.*, that sum being made up as follows: — New floors and seats of oak, 1,000*l.*; repair of internal and external stonework, 1,300*l.*; repairs of roof, 700*l.*; chancel, 550*l.*; warming, 250*l.*, &c. By a re-arrangement it is expected fifty additional sittings will be obtained. Subscriptions amounting to nearly 1,300*l.* have been promised.

Boston Spa.—The parish church, partially rebuilt and generally renovated, has been reopened. The designs selected were those of Mr. Walter H. Parkinson, of Leeds, and in accordance with them the partial reconstruction has been carried out, as will doubtless be the rebuilding hereafter of that part which stands. The work was begun in July, 1872, by pulling down the east end, consisting of a low chancel-arch and very short chancel. A new chancel-arch, chancel, with organ-chapel at the north side and two vestries at the south side, have been added eastward of the existing nave, and a transept and part of aisle southward, open to the nave by an arcade of four arches. The style of architecture is Early English, the stone used being the local limestone from Clifford, Wetherby, and Bramham Moor quarries. The chancel walls are faced with dressed wall-stones both externally and internally. The chapels, transept, and aisle are plastered internally up to the ashlar-work of the windows and arches. The chancel is 26 ft. 6 in. long (greater length could not be obtained, as it is now built up to the eastward boundary of the churchyard), 22 ft. wide, and 45 ft. in height from floor to ridge. The roof is an open-timber one, of red pine, varnished. The east window is a triplet with cusped lancet-heads, moulded internally, the arch-moulds being carried on foliated shafts. The centre light is 18 ft. high in the clear. North and south of the sacrarium are double-light lancet windows with cusped heads. The organ, inclosed in a pitch-pine case, with coloured pipes, has been built by Messrs. Forster & Andrews, Hull. The chancel-arch, which is double-rimmed, is 18 ft. 4 in. wide and 30 ft. 6 in. in height from the floor of the nave to the apex. The south transept is 18 ft. long by 19 ft. 6 in. wide, and is 40 ft. high from floor to ridge. That part of the south aisle now completed is 42 ft. long and 11 ft. wide, and is divided into three bays, with two small single lancet windows in each bay. Nave, transept, and aisle are now fitted with open pitch-pine sittings. The work which still remains to be done is the taking down of the nave, north aisle, and tower; completing the nave, arcade, and south aisle with another bay; building a similar arcade, transept, and aisle on the north side; erecting the clearstory above the arcades, and a new nave and tower at the west end. The roof also will require to be renewed. The reconstruction so far carried out, exclusive of furniture, has cost about 2,300*l.* The church will accommodate about 500 persons.

Dudley.—St. John's Church, Kate's-hill, has been re-opened, after undergoing extensive alterations, including the erection of a new chancel, with organ chapel and a vestry. The central portion of the roof has been raised, and additional light given by the introduction of quatrefoil windows immediately beneath the raised portion. A new portion of the roof is supported by an arcade of seven bays, having columns of red stone (from Lord Dudley's "Straits" quarries), with bands and carved capitals in Bath stone. Old obstructions in the shape of inside porches to the galleries have been swept away, and outside porches erected. This arrangement gives considerably more room in the church. The floors have been laid with encaustic tiles. The pulpit, of Caen stone, carved and inlaid with marble, is the gift of Mr. E. Terry, one of the wardens, and his family. One of the stained windows has been subscribed for by the teachers and scholars. The reredos, of Caen stone, alabaster panels, is the gift of the family of the late Mr. John Jones, of Cawney-bank. The total cost of the alteration of the church is 2,600*l.*

Tedstone Wafer and Edvin Loach (Herefordshire).—The parishes of Tedstone Wafer and Edvin Loach are consolidated, and the consecration of the churches, although erected some years ago,—the former after designs by Sir Gilbert Scott, and the latter from plans furnished by Mr. Haycock, of Shrewsbury,—has been delayed. The necessities of the parish have, however, in the case of the new edifice at Edvin Loach, been met by licensing it for public worship. Additional space has also been thrown into the churchyard, rendered necessary by the circumstance that it is the only ground available for interment for both parishes. The churches were erected by the late Mr. Edmund Higginson, of Saltmarsh Castle. The building at Edvin Loach is situated on high ground. The tower, which contains three bells, is surmounted by a spire, and stands upon pillars. Upon entering, the space underneath the spire has the appearance of an ante-chapel, which is divided from the nave by an arch, at the opposite end of which there is a short chancel and apse, containing three coloured windows. The roof is of polished timber, plastered within the interstices. The choir stalls are of pine, and the body of the church is furnished with open stalls. The whole of the sittings, of which there are about seventy, are free. The accommodation, however, can be increased when necessary by the introduction of chairs. The church at Tedstone Wafer was built by Bowers & Co., of Hereford, and is provided with accommodation for about seventy persons, the seats, of polished oak, being open and free. The principal feature of this church, which consists of nave and chancel, is a Bath stone screen in front of the harmonium. The east window consists of three pointed lights, the western end admitting of a larger one with four. There are several other small windows in character. The roof is of polished timber and plaster. Both churches are built of grey stone, roofed in with coloured tiles. The consecration of both has now taken place.

Hartford.—The ceremony of laying the foundation-stone of St. John's Church, Hartford, which is being rebuilt, has been performed by Lieutenant-Colonel Marshall, the patron of the living. The new church will be built partly on the old site, and partly on land recently purchased, adjoining the Chester and Northwich-road. From the designs, which have been prepared by Mr. J. Douglas, of Chester, architect, we learn that the edifice, architecturally, will be Gothic, of an early type, and will consist of nave, north and south aisles, with tower, 22 ft. square at the west end, terminating with a broached spire; chancel, with transept for children on north side, the organ-chamber and vestry being on the south side of it. The nave is separated from the north and south aisles by an arcade of piers and arches. The church will be entered through porches on the north and south sides. The walling of the exterior and interior will be Macclesfield stone, the dressings being of Runcorn and Eddisbury stone. The roofs are to be open-timbered, and all covered with Broseley tiles. The ceiling of the chancel is proposed to be arched in stone, with moulded ribs and cornice. The church will be fitted with open pews, capable of accommodating 520 persons. The present contract, 3,700*l.*, is let to Mr. R. Beckett, of Hartford, but this does not include the tower and spire. The masonry contract has been sublet to Mr. John Holland, of Northwich. Mr. Walter Edwards is appointed clerk of the works.

Testimonial to Mr. H. Brady, C.E.—A dinner was given at the Pier Hotel, Ryde, on Wednesday evening in last week, on the occasion of the presentation of a testimonial to Mr. Henry Brady, C.E., late district engineer of the London and South-Western Railway Company, when a number of gentlemen connected with the railway and steam-packet companies running to the Isle of Wight sat down. The testimonial consists of a handsome luncheon tray and salver, of considerable value, made by Mr. Thurlow, goldsmith, of Ryde.

STAINED GLASS.

All Saints, Broadchalke.—The completion of the memorial west window, to the late vicar of Broadchalke, has been celebrated. The design was drawn up and executed by Messrs. Ballantine, of Edinburgh. The window is a five-light traceried window, of Perpendicular style. In the centre light is our Lord, holding the orb in one hand, and the other hand uplifted; while underneath is inscribed the text, "I come to bear witness unto the truth." In the two lights on the right side are figures of Elijah, the preaching prophet, and Isaiah, the writing prophet; while on the lights upon the left side of the window are figures of St. Paul and St. John. Canopy work rises into the cusped arches of each light, and divides this under-tier of figures from those inserted above in the tracery windows. Four of these tracery compartments are illustrations of the life of Dr. Rowland Williams, who is represented therein respectively as student, teacher, preacher, and writer. The main compartment above is occupied with the allegory of Truth overcoming the world.

Church of St. Lawrence Jewry, Gresham-street, London.—A second stained-glass window, from the establishment of Messrs. Cox & Sons, has lately been erected in this church to the memory of Mr. John Kynaston. It is one of the circular-headed windows piercing the screen which divides St. Lawrence Church from that of St. Catherine, and consequently it receives a borrowed light: hence great judgment and discrimination required to be used in the general arrangement and colouring. The main feature of the design is an architectural composition, Renaissance in style, enriched by festoons of flowers, leaves, and fruit, relieved by scroll-work dividing the whole space at the springing of arch into two grand portions; in the lower and larger of which, within a niche, stands a full-length and full-size figure of St. John the Evangelist in the act of writing, with the head slightly upturned, accompanied by the eagle; in the other, at the head of the window, is depicted a representation of Christ rising from the Tomb, in a large circular medallion, the latter supported by a broad rich border running round the arch, broken up by smaller medallions with cherubs' heads.

Standish Church.—The Misses Sheringham, daughters of the late vicar, the Rev. Canon Sheringham, for some three years or more have laboured quietly to fill the east window of this church with stained glass. This has just been done by Messrs. Clayton & Bell. The five lights are occupied by five scenes from the history of our Saviour,—the Annunciation, the Nativity, the Crucifixion, the Resurrection, and the Ascension,—and are respectively memorials.

Berkeley Church.—There has just been put up in the chancel of this church a memorial window to Dr. Jenner, the discoverer of the vaccination system. The movement which has now been brought to a successful result was started some years since, when the Rev. J. C. Norman was in charge of the parish, but for a long time little progress was made. A fresh start was, however, given to the proposal through the instrumentality of Mr. Kingscote, who got a committee formed in London; and the necessary funds (500*l.*) having been procured, the provision of the window was undertaken by Messrs. Hardman, of Birmingham, and the work has been completed. The window is of large size. The compartments depict various miracles of healing recorded in the Gospel of St. Luke; the centre one represents the Saviour as the Heavenly Physician, underneath is Luke the physician; and on either side are representations of our Lord as the Good Shepherd and the Good Samaritan. Another item of restoration which is much needed, is a new reredos. A portion of the old one remains; but it is in such a decayed state that at present it is covered with a curtain. The cost of a new reredos is estimated at 1,000*l.*

St. Mark's Church, Tollington Park.—Three painted windows have lately been placed in this church in memory of the late Rev. John Lees. The entire work is from the studios of Messrs. Gibbs & Moore, Southampton-row, London.

Barnard Castle Church.—A memorial window has just been placed in this church, by Messrs. Brownless and the Misses Brownless, of New Broomielaw, to the memory of their parents. The window,—a three-light one,—is by Mr. Baguley, of Newcastle-on-Tyne. The first compartment is filled by a representation of Mary anointing our Lord's head. Our Lord is seated

at meat, and in the act of rebuking Judas for his fault-finding of Mary's loving act. Behind are seen trees, flowers, &c., and buildings showing the Oriental fashion. The central compartment is the woman touching the hem of Christ's garment. The third compartment is Mary sitting at the feet of Christ, in the house of Lazarus. The groups surmount tabernacle work, and below are bases of the same.

Stow-on-the-Wold Church.—A stained-glass window, executed by Messrs. Wailes & Son, of Newcastle-upon-Tyne, has been erected in this church, by Mr. Hayward, surgeon, to the memory of his mother. The window consists of two lights, in which four subjects are introduced, illustrative of the story of the Good Samaritan.

VARIORUM.

For thirty years the *Agricultural Gazette* has formed a constituent part of the well-established and well-esteemed *Gardeners' Chronicle*. So widely, however, has the interest in horticultural and agricultural matters extended, that it is now found desirable to make them separate weekly publications, and as such they will appear in the coming year.——A new candidate for public favour in the colonies and at home is being established at Melbourne, Victoria, under the title of the *Australian Sketcher in Pen and Pencil*. It issues from the respectable office of the well-known Melbourne *Argus* and the *Australasian*. The new journal is a monthly, and is intended, as its title indicates, to deal with the picturesque phases of public and social life in the colonies. The best talent is to be employed in preparing the views, and arrangements have been made to obtain sketches of noticeable objects or events in the other colonies of Australia and New Zealand, and also for obtaining views of subjects of special Australian or great intrinsic interest from England and the Continent of Europe. The literary portion of the paper will pay attention to original productions of local art and literature, and will seek to present a bright and interesting reflex of the more lively aspects of Australian life in town and country.——"Gas Consumers' Manual; or, How to Obtain Cheap Gas and Good Light. By E. S. Cathels, C.E. London: King, Bolt-court." This is a very useful manual for all who wish to know how to obtain cheap gas and good light, and to enjoy the advantages and comforts of gas for lighting, cooking, and heating. It also gives directions how to read the index of the meter. The Manual was issued at Montreal, of the gasworks of which the author is the manager; but the treatise is based on his knowledge as an experienced gas engineer in this country, Mr. Cathels having been connected with the Crystal Palace District Gasworks before he went to Montreal. We do not see in the Manual, however, anything as to the more recent forms of burners which have been exciting interest in this country, and talk at least of which has been superseding that of older forms. ——"The Setting and Working of Retorts. By E. S. Cathels, C.E. London: King, Bolt-court." An account of Cathel's retort settings is given in this pamphlet, which consists of a paper read by the author at the Society of Arts, Adelphi, in 1870.

Miscellanea.

Museums and Galleries of Science and Art.—A deputation from the Council of the Society of Arts had an interview yesterday with the Royal Commissioners of Scientific Instruction. The deputation consisted of Major-general F. Eardley-Wilmot, R.A., F.R.S. (chairman of the Council); Mr. E. Chadwick, C.B.; Colonel Croll, Mr. Hyde Clarke, the Rev. Septimus Hansard, Admiral Ommanney, F.R.S.; Colonel Strange, F.R.S.; Mr. Seymour Teulon, with Mr. Le Neve Foster, secretary. The chairman of the Council stated that the object the Council had in view was to bring before, and ask the support of the Commissioners the action the society was now taking in reference to museums, and pointed out that this especial regard to the State giving increasing aid to existing museums, to aiding in the multiplication of such museums, and rendering them available for educational purposes. He further pointed out the necessity for all museums being placed under the control of a Cabinet Minister, responsible to Parliament.

Improvements in Athens.—The *Levant Herald* says,—"It must be confessed that the Government and the municipality of Athens are doing their best both to render our city agreeable to the eye and to add to the salubrity of its climate by improvements of every kind. Lately Mr. Deligeorges, accompanied by the mayor, minutely inspected the squares, public gardens, and buildings in course of erection. The result of this inspection has been the appointment of a commission on the improvements to be introduced, which has already begun by planting trees and laying out flower-beds in the large square named after the great Philhellene, King Louis of Bavaria, which is situated at the entrance of the town. It has also been decided to convert into a public garden the large space lying between the Palace gardens and the columns of Jupiter Olympus, where the ruins of ancient Roman baths have lately been discovered, and where it was proposed to build the exhibition building. By this decision several advantages, both moral and material, are secured; an agreeable promenade will be created in one of the most picturesque positions in Athens; the view of the noble old columns will remain unmarred by the proximity of any modern edifice; the exhibition buildings will be placed on a more appropriate site, near the ancient Stadium; and the ruins of the Roman baths will be preserved."

The Pneumatic Despatch.—This system is now undergoing a practical trial, the experimental working of which may, it is hoped, lead to satisfactory results. Its usefulness in the metropolis might be very materially increased. The Pneumatic Company have already a terminus at the Euston Station, and the proximity of the Midland and the Great Northern Stations at once, as the *Times* remarks, suggests short extensions to both of those points, and the relative position of the Holborn Station with that of the South-Eastern Railway at Charing-cross, and of the Post-office Station with that of the same railway at Cannon-street, would render an extension in either of these directions no very difficult matter. Then there are the district offices of the postal system, most of which might be placed in direct communication with the chief office by means of the pneumatic tube, in the same way that, to some extent, and by means of small tubes, the postal telegraph offices are connected at the present time. There appears to be no reason, in short, why it should not be generally extended to all parts of the metropolis, and to the suburban districts.

Banquet to Mr. Joseph Mayer.—A banquet has been given by the tradesmen of Liverpool to Mr. Jos. Mayer, on the occasion of his retirement from business as a goldsmith and jeweller in the town. Mr. Mayer's chief fame, as many of our readers know, was as an antiquary, and his collection of rare specimens of ancient art and manufacture, to which we have had occasionally to refer, is one of the most complete in the country. He is also highly esteemed for his philanthropic schemes and gifts, having presented to the town of Liverpool a museum of so valuable a character as to be designated the "Mayer Museum," and having established a public library and a large park for the village of Bebington, in Cheshire, near to which he resides. The proceedings at the banquet were of a most enthusiastic description. A handsomely illuminated address was presented to the guest of the evening. The mayor and the leading public men of the town were present.

Macclesfield School of Art.—The annual meeting of the Macclesfield Useful Knowledge Society and School of Art, has been held at the town-hall. There was a good attendance. The president (Mr. W. C. Brocklehurst, M.P.) occupied the chair. In the course of the meeting Mr. Nicholson announced the following subscriptions towards the erection of a new school of art:—Messrs. Brocklehurst & Sons, 500*l.*; Alderman Birchenough, 50*l.*; Alderman D. Clarke, 25*l.*; Alderman Wright, 25*l.*; Mr. William Smale, 25*l.*; himself, 25*l.*; the Mayor, 20*l.*; Mr. John Jackson, Modern School, 5*l.*; Mr. John Walker, 5*l.*; Alderman Bullock, 25*l.*; Critchley, Brinsley, & Co., promised by Mr. Brodrick, 10*l.*; Mr. J. J. Brunt, 10*l.*; and Mr. J. Dawson, 20*l.* They would be pleased, he added, to hear that Mr. Chadwick had kindly promised 200*l.*, and if 5,000*l.* were raised he would supplement it by 300*l.* more, making 500*l.* altogether. Other subscriptions have been since received.

Oxford Architectural and Historical Society.—The Saturday walks and excursions have commenced. The following have been arranged for this term:—Saturday, November 15th, Brasenose College and All Souls Chapel were visited; the latter with especial reference to the progress which has been made in the restoration of the Chichele reredos. It is somewhat similar in arrangement to that in Winchester Cathedral, including two stories of canopied niches, one over the other, and a large cross over what was the altar. All the corbels and canopies have been chopped down to a uniform face. On Saturday, November 22nd, it is proposed to meet in the hall of Pembroke College, when the Rev. the Master will receive the members, and the Bursar will conduct them over the various parts of the college. They will afterwards visit Bishop King's House, an interesting example of domestic architecture of the sixteenth century.

White Lead.—Mr. William Thompson, of Wandsworth-road, has patented some improvements in the manufacture of white lead. The invention relates to improvements in the process of and apparatus used in manufacturing white lead. The melting-pan is made in compartments for regulating the temperature and securing the purity of the blue lead. This lead is made into thin sheets of open texture by pouring it into a revolving cylinder kept cool, and it is granulated by running it in a thin stream between a roller and an inclined knife, and receiving it in water. The sheets and granules are charged on trucks, which are run upon rails into the chambers where the chemical reagents act on the lead, so as to convert it into white lead, the trucks charged with the converted lead being run out at opposite doors. The converting-chambers are supplied with acid gases and vapours heated before their introduction in steam-jacketed pipes or vessels.

Handy Chemistry of Farm Crops.—A simple table indicating the amounts of chief manurial constituents contained in average crops calculated per imperial acre, has been published by the Agricultural and Horticultural (Co-operative) Association, 47, Millbank, Westminster, being the third of a series so published. The principal manurial constituents appear in red, blue, and yellow lines, longer or shorter according to the quantities of the nitrogen potash, and phosphate; with a key to the table, to enable the farmer to regulate his dressings of manure by simple reference to the table. Of course, everything depends on the accuracy of the table, which is easily understood. There are columns showing the names of the crops, and the quantities per acre, with the average weight in pounds, and the constituents by name. The mangolds hold a distinguished place in the table, especially as regards the nitrogenous constituent.

The London Lunatic Asylum.—At the last Court of Common Council, Alderman Besley brought up a report from the visiting justices of the lunatic asylum, recommending that an additional sum of 5,000*l.* should be appropriated to the sum of 4,000*l.* already agreed upon to provide suitable accommodation for seventy additional pauper lunatics. He said that alterations which could have been effected for the original sum of 4,000*l.* had been submitted to the Commissioners of Lunacy, who disapproved of them, and recommended certain alterations to be carried out, which would entail an additional expense of 5,000*l.* He observed that "lunacy appeared, unhappily, to be very much on the increase among the poorer classes in the city of London," and it was absolutely necessary that the visiting justices of the lunatic asylum should provide the necessary accommodation to receive them. The report was agreed to, and the recommendation ordered to be carried out.

A Canine Memorial.—A fountain of Peterhead granite, of which we have before spoken, has now been erected at George the Fourth's Bridge, Edinburgh, in memory of a terrior known as Greyfriars Bobby. The memorial is erected by the Baroness Burdett-Coutts, who was attracted by a narrative of the dog's attachment to its master. The pedestal bears the following inscription:—"A tribute to the affectionate fidelity of Greyfriars Bobby. In 1858 this faithful dog followed the remains of his master to Greyfriars-churchyard, and lingered near the spot until his death in 1872. With permission, erected by the Baroness Burdett-Coutts."